DOCUMENT RESUME

ED 112 492 95 EA 007 527

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TITLE Into the Mainstream. A Syllabus for a Barrier-Free Environment.
INSTITUTION American Inst. of Architects, Washington, D.C.
SPONS AGENCY Rehabilitation Services Administration (DHEW), Washington, D.C.
PUB DATE Jun 75
NOTE 51p.

EDRS PRICE MF-$0.76 HC-$3.32 Plus Postage
DESCRIPTORS Annotated Bibliographies; *Architectural Barriers; Building Design; *Building Improvement; Civil Rights; Environmental Influences; *Facility Guidelines; *Facility Requirements; Federal Legislation; Performance Specifications; Physical Environment; *Physically Handicapped; Standards

ABSTRACT

This syllabus contains practical information necessary to plan a barrier-free environment. The first chapter provides an account of what has happened in the past generation to make buildings and spaces accessible to handicapped persons and reviews the most recent laws, codes, and standards that prescribe the accessibility of buildings. The second chapter describes the basic physical and procedural barrier conditions that the handicapped face. The third chapter contains solutions to the removal of barriers, including drawings illustrating some of the most common conditions. It also contains techniques for organizing community barrier-free action groups and methods for evaluating compliance with applicable laws and regulations. The fourth and final chapter offers supplementary sources of information: annotated published sources, a sample questionnaire for use in evaluating accessibility of buildings, and a listing of public and voluntary agencies whose staffs can help in more detail with guidance in particular areas. (Author/MLF)

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INTO THE MAINSTREAM
A SYLLABUS FOR A BARRIER-FREE ENVIRONMENT

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HEW

THE AMERICAN INSTITUTE OF ARCHITECTS

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This syllabus was prepared under a grant to the American Institute of Architects by the Rehabilitation Services Administration of the Department of Health, Education and Welfare.

National Policy for a Barrier-Free Environment

"In the United States today it is estimated that one out of ten persons has limited mobility due to a temporary or a permanent physical handicap. Improved medical techniques which provide some mobility where it was not possible in the past and an expanding population of older persons is increasing this number every year. Yet in general, the physical environment of our Nation's communities continues to be designed to accomodate the able-bodied, thereby perpetuating the isolation and dependence of disabled persons. To break this pattern requires a national commitment.

"Therefore, it shall be national policy to recognize the inherent right of all citizens, regardless of their physical disability, to the full development of their economic, social and personal potential, through the free use of the manmade environment.

"The adoption and implementation of this policy requires the mobilization of the resources of the private and public sectors to integrate handicapped people into their communities."

Introductory Notes

The Rehabilitation Services Administration's main function in the Department of Health, Education, and Welfare is the administration of Federal funds for the support of the State-Federal program of vocational rehabilitation. Through this program disabled people receive, as needed, medical, vocational, counseling, educational, and placement services. Technical advice—and often funds—are provided for planning, renovation, and construction of rehabilitation facilities and workshops. The Rehabilitation Services Administration therefore has a vital interest in good communications not only with architects and those who commission buildings, but also with those who deliver rehabilitation and other community services to handicapped people. Advocating and supporting barrier-free design projects is one of the ways in which we help communities to identify and meet the needs of the severely disabled.

The RSA aided the development of the key standards, ANSI A117.1, put out by the American National Standards Institute. The RSA has also staffed the National Commission on Architectural Barriers; taken part in developing specifications for milestone Public Law 90-480 (the Architectural Barriers of 1968); joined with the American Institute of Architects in many regional conferences to orient architects to barriers problems; and helped to establish the Architectural and Transportation Barriers Compliance Board. In this manner the RSA helps to improve the quality of life for people with disabilities. This syllabus, with its up-to-date information, will help further these objectives. It should provide the stimulation for a cooperative effort of persons working for more accessible communities.

Dr. Andrew S. Adams
Commissioner
Rehabilitation Services Administration

Sooner or later in life nearly everyone will experience a disability that denies him or her unassisted access to, and use of, buildings. The disability can range from a dislocated ankle to a serious, permanent handicap caused by disease or accident. And should some fortunate person escape injury entirely, he or she will still be regularly encumbered by loads—a shopping cart, a heavy suitcase, a baby carriage, a state of pregnancy.

The architect is the key professional obligated to design buildings without barriers—in the way he creates and connects spaces, specifies hardware, controls and lighting, and plans access to and from the building. A growing collection of laws, codes and regulations has now added to this professional and moral obligation a legal requirement.

As a storehouse of facts, figures, background and trends, this syllabus will help launch the architect and his entire team towards that crucial goal: to bring every handicapped person into the mainstream of daily living.

William Marshall Jr., FAIA
President
The American Institute of Architects

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Foreword

This Syllabus is for all those who through concern or legal oblination care about a barrier-free environment and are prepared to do something about it.

It is intended especially to guide and encourage those whose concern is recent.

If you are:

(a) an administrator, counselor, physician, facility specialist, therapist or one in another role involving the delivery of vocational services to handicapped individuals;

(b) an architect, builder, public official or planner who because of personal concern and the growing pressure of laws and codes need a basic treatise as a base for more in-depth inquiry;

(c) an owner, developer, administrator or manager of facilities (whether of a college, department store, apartment or theater) concerned about access to your facility by the handicapped but feel you don't really know enough about the legal and technical sides of the barrier-free issue to proceed; or

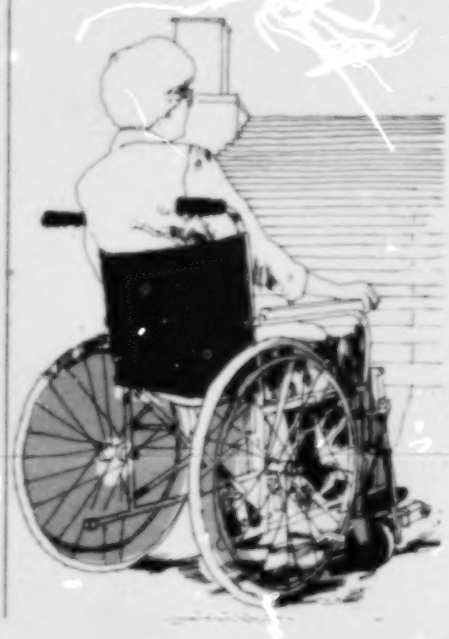
(d) one of the large family of private citizens, community workers, handicapped as well as able-bodied, who wants to know what to do and how to start to bring local buildings and sites to a barrier-free level of access, then Into the Mainstream is ready to provide answers to many of your questions and tell you where to find the rest.

This Syllabus on barriers is also aimed for use by administrators and seasoned workers in the rehabilitation services field, as well as those newly graduated, because their professional journals do not usually give great coverage to these issues. It is not aimed at providing the architectural designer working at his drafting table on a specific project with all the technical information he needs to make the building accessible; for that he is best served by some existing graphic guides, as listed later in this Syllabus.

Into the Mainstream is designed to open up vistas to those who are new to the issues and who are eager to get on with the job of making sure our man-built environment is accessible to all Americans.

ACKNOWLEDGMENTS

Many groups and individuals helped me as I worked on this project. Outstanding among these was Rita McGaughey of the National Easter Seal Society for Crippled Children and Adults, without whose guidance, insights and encouragement this Syllabus would never have seen the light. Others whose counsel was invaluable are Kathaleen Arneson and her colleagues at the Rehabilitation Services Administration, and Edward Nowak, Maurice Payne



and other members of the AIA Barrier-free Task Force. Edmond Leonard of the President's Committee on Employment of the Handicapped was most helpful in his role as devil's advocate. Peter Lassen, Ronald Mace, William Power, Evelyn Villines, Dr. Timothy Nugent and Andrea Lubershane reacted usefully to early ideas and drafts. Architects Sarah Harkness and her associates and Robert Lynch conveyed much that was useful on the encouraging progress in Massachusetts. The legal aspects were well reviewed for me by Ovid Lewis of Cleveland. Robert Humphreys, special counsel to the Senate subcommittee on the handicapped, provided insight into the hazards a bill must pass before it becomes law. Commissioners Fitzgerald and Kill of the City of Chicago and architect J. Armand Burgun of New York helped with their viewpoints on building codes. The special problems of the blind were methodically pinpointed for me by Eunice Fiorito of the New York Mayor's Office of the Handicapped. Especially stimulating was my meeting with Ralf Hotchkiss of the Center for Concerned Engineering for his skillful analysis of what is wrong and could be right with the wheelchair. The infectious zeal that Helen Goodkin infused into ACCESS Chicago came across to me in our thirty minute interview. Finally, one of my most moving experiences was to listen to architect Edward Matthei of Chicago talk about the contacts he has had with handicapped men and women during his many years of work in the cause of a barrier-free architecture.

Stephen A. Kliment, AIA
New York, April 1975

How You Can Use This Syllabus

This Syllabus is your tool for opening doors to a lot of practical information you will need as you work for a barrier-free environment in your community.

The first chapter provides a useful account of what has happened in the United States in the past generation to make buildings and spaces accessible to handicapped persons. This background will give you the perspective against which to measure current activity, and will allow you to build on it as you make your own contribution. Special attention should be paid to the review of the most recent laws, codes and standards that prescribe the accessibility of our buildings.

The second chapter describes the basic barrier conditions, both physical and procedural, which the handicapped face and which must be resolved.

In the third chapter, you will find solutions to the removal of barriers, including drawings that illustrate some of the most common conditions. You will also find techniques for organizing barrier-free action groups in your community and methods for evaluating compliance with applicable Federal, State and local laws and regulations.

The fourth and final chapter offers supplementary sources of information to explore as you move further into the field. The first part consists of published sources. For your convenience, these are arranged under nine headings: general; design guides; legal and legislative; codes, ordinances and regulations; compliance and advocacy; product design; travel and transportation; periodicals and information services; and films. Also included is a sample questionnaire for use in evaluating accessibility of buildings in your community.

The second part of the chapter is a listing of important public and private (voluntary) agencies whose staffs can help you in more detail with guidance in particular areas.

1. Background

WHO ARE THE HANDICAPPED?

Not everyone who is disabled can be classed as handicapped. Conversely, not everyone who is handicapped is necessarily disabled. For example, a person who is deaf or epileptic or even blind may be defined medically as having a disabling condition, but the condition is not one which will deter those affected from overcoming most common architectural barriers in and around a building. In fact, the very steps which are a major barrier to anyone confined to a wheelchair may be used as guides by blind people.

On the other hand, a pregnant housewife pushing a loaded shopping cart home from the supermarket is not medically disabled, but she is surely handicapped.

In other words, as we consider a barrier-free environment, we need to define the kinds of physical characteristics or conditions that prevent people from using buildings, define those barriers and seek to end them.

A handicapped person, in this context of buildings and adjacent spaces, is anyone who is hampered in his mobility or functioning (as compared with an able-bodied person) as a result of obstacles put in his way by the design of a building, the choice of hardware and equipment, and the arrangement of outside spaces. The following list provides a general overview of three broad categories of individuals who, at one time or another, come under this definition.

Temporary condition:

- Fracture
- Pregnancy
- Movement of large or heavy loads
- Convalescence from operation

Characteristic condition:

- Childhood
- Dwarfism
- Frailty due to old age
- Frailty due to physical size or build
- Gigantism
- Obesity

Long-established condition:

- Sight disabilities
- Hearing disabilities
- Non-ambulatory disabilities which confine the individual to a wheelchair
- Semi-ambulatory disabilities due to which an individual walks, climbs, bends or stoops, reaches, waits, or carries modest loads with difficulty
- Coordinating disabilities due to brain, spinal or peripheral nerve injury.

Where barriers have been removed, an individual, however disabled, may no longer be handicapped in entering and using a building.

WHY A BARRIER-FREE ENVIRONMENT?

As a result of improved rehabilitation methods, healthier diets, better sanitary conditions and improved medical care, far greater numbers of disabled individuals now have the potential to live useful and relatively independent lives. As a corollary to this, the handicapped are increasingly being thought of as a classification of citizens whose civil rights are being abridged by the presence of barriers.

We thus have the force of numbers and the force of a constitutional cause.

BARRIER-FREE AS A CIVIL RIGHT

All the states now have statutes on architectural barriers[1]. But the road from law to enforcement is often arduous, and coverage is often limited to buildings financed out of public funds. According to one authority, attorney Frank Laski[2], many

[1] A Survey of State Laws to Remove Barriers, President's Committee on Employment of the Handicapped, tabulates provisions of state laws through August 1973.

[2] The Social and Rehabilitation Record, May 1974

Anyone who is handicapped in mobility or functioning—whether that person is confined to a wheelchair or pushing a loaded shopping cart home from the supermarket—must be a target for attention.

statutes are riddled with waiver clauses. This makes it important for handicapped persons to establish that these statutes do not define the limits to right to access. He cites a landmark lawsuit (Friedman vs. County of Cuyahoga) in which the barriers existing in several county buildings containing courtrooms prevented Friedman, a handicapped attorney, from entering them without assistance. Through another attorney, Ovid Lewis, he filed a class action suit seeking a so-called declaratory judgment as to right of access and fast relief through an injunction. Since the county buildings were already built they were not covered by the Ohio barriers statute, and the action therefore was based on rights guaranteed by the Ohio and U.S. constitutions. Friedman said his constitutional rights were infringed, and affirmative action was required from the county.

When the county commissioners agreed to install the necessary ramps and remove other access barriers in all existing county owned buildings, the law suit came to an end.

In relying on several constitutional rights which the courts have strongly protected in instances not related to barriers, the Friedman case has served as a key precedent; it has made the point that handicapped must be treated first as if they were people, and then apply to them the same Bill of Rights we apply to everyone else."

THE REHABILITATION ACT OF 1973 (P.L. 93-112) AND AFFIRMATIVE ACTION

The legal concept of affirmative action for those discriminated against in employment has recently been expanded to include the handicapped in sections 503 and 504 of Public Law 93-112, passed in 1973 and amended by Public Law 93-516 in 1974.

Sections 503 and 504 apply to organizations doing business with the Federal government—section 503 covers Federal contracts and is administered by the Department of Labor; section 504 covers Federal grants and Federally *assisted* contracts, and is administered by the agency making the grant or providing the contract.

In essence, section 503 requires affirmative action under any contract or subcontract over $2500. It includes construction contracts. The clause requires that qualified handicapped applicants be actively recruited, considered and employed. No handicapped individual may be discriminated against on the basis of his or her handicap. Furthermore, the provision applies to job assignments, promotions, training, transfers, termination, accessibility and working conditions during employment as well as to hiring practices. The requirement will clearly pressure employers and institutions that want contracts and grants from the Federal government to literally put their house in order by eliminating barriers.

A question may well arise as to whether or not an employer whose architectural facilities do not allow a person in a wheelchair to maneuver freely would be liable if he didn't hire that person. In response, government officials who will be implementing the law told a Washington, D.C., workshop in July 1974[3], that required architectural accommodation would depend on reasonableness under "all of the circumstances," including such things as extent, kind and cost of accommodation. Each case would have to be considered individually. On large contracts for which an employer could be expected to hire numbers of handicapped persons, more extensive architectural accommodations might have to be provided. On smaller contracts, the contractor might be required to provide no more than an access ramp and toilet facilities.

Sections 503 and 504 and the Friedman case typically seek to remove barriers on the basis of a handicapped individual's rights. In the long term this may well be the approach that achieves the greatest results.

THE LEGISLATIVE ROUTE

Federal, state and local laws and regulations which specify barrier conditions to be corrected are a more direct and, for the present at least, far more effective approach. These laws began to be enacted in the early 1960's, and can by and large be traced back to the development and promulgation of what until very recently has surely been the key document guiding barrier-free legislation.

ANSI STANDARD 117.1

This document, Standard 117.1, was published in 1961 by the American National Standards Institute, Inc. (ANSI). "Specifications for making buildings and facilities accessible to, and usable by, the physically handicapped" (to give the standard its full name) was triggered by a 1959 conference attended by interested groups. The President's Committee on Employment of the Handicapped, along with the National Easter Seal Society for Crippled Children and Adults, sponsored the two-year project.

Standard 117.1[4] has been the underlying basis of most legislation and regulations now on the books. It is intended to apply to all buildings and facilities "used by the public" (we shall take another look later at this ambivalent term). It identifies certain requirements (sizes and function-

[3] Affirmative Action to Employ the Handicapped, 8-page pamphlet based on this Workshop and prepared by the President's Committee on Employment of the Handicapped. Includes listing of appropriate contacts in 10 regions of the Labor Department's Employment Standards Administration, charged with administering sec. 503.

[4] Consult Chapter IV on how to obtain copies of the Standard.

ANSI Standard 117.1, which has shaped barrier-free legislation for the past 15 years, is geared to a social climate which is now largely eroding. New standards are currently being developed.

ing of a wheel chair and crutches) and handicapping conditions (blindness, deafness, semi- and non-ambulatory disabilities, and disabilities that stem from incoordination and old age). It responds to these requirements and conditions by establishing minimum conditions of parking, site grading, building design, dimensioning of washroom and other facilities, design and disposition of signals and controls. The formulators hoped that these conditions would, if observed, make the building accessible.

The Standard has lost some of its usefulness over the years. As the first model document of its kind, it was geared to the social climate of 15 years ago. Today, citizens are more aware, more concerned, and will agree to tougher standards. The concept of what a "public" building is has also expanded. ANSI 117.1 did not include residential buildings and left equivocal such public or semi-public accommodations as hotels, motels and college dormitories with their heavy content of living, cooking and washing activity.

DEVELOPING A STANDARD FOR HOUSING

To compensate for these oversights, the University of Syracuse has begun an intensive two-year project to revise ANSI 117.1. The project[5] will expand the scope of ANSI 117.1 to include dwelling units and related exterior spaces, single as well as multi-family housing, and mobile homes.

The new standard will be submitted for adoption to ANSI. It should then have great impact: As most current Federal and state laws, as well as many codes, incorporate ANSI 117.1 by reference, amendments to include the new standard, once it is adopted, will be a relatively simple matter. The new standard will also be submitted for inclusion in the powerful Minimum Property Standards used by HUD's Federal Housing Administration for FHA-insured housing.

THE ARCHITECTURAL BARRIERS ACT OF 1968, AND ITS SEQUELS

Between 1968 and 1974, several major Federal barrier-free design acts became law—each having strong influence within a limited sphere. Public Law 90-480 (the Architectural Barriers Act of 1968) seeks to make barrier-free any facility built or supported by Federal funds. (This Act followed closely on the heels of a strongly couched report made by the National Commission on Architectural Barriers to Rehabilitation of the Handicapped and entitled "Design for all Americans.")

The key thrust of P.L. 90-480 is that "any building constructed in whole or in part with Federal funds must be made accessible to and usable by the physically handicapped." The Administrator of the General Services Administration (the Federal government's main buyer of non-military goods and services, including building construction) was to determine the standards for compliance with the Act, and he selected ANSI Standard 117.1 as the standard to be met.

The effectiveness of P.L. 90-480 was at first limited by the lack of any strong enforcement mechanism. One objective of P.L. 93-112 (The Rehabilitation Act of 1973) was to make up for this lack. P.L. 93-112 contains a section 502 that establishes an Architectural and Transportation Barriers Compliance Board. This Board, its authority enhanced by the amendments contained in P.L. 93-516 passed in 1974, has the power to "conduct investigations, hold public hearings and issue such orders as it deems necessary to insure compliance" with the provisions of P.L. 90-480. [Sections 503 and 504 of this act cover the affirmative action aspects; they are discussed in context on p. 7].

A third act, the Urban Mass Transportation Act of 1964, was amended in 1970 by the so-called Biaggi amendment which called for barrier-free mass transit wherever Federal financial assistance was involved.

A fourth act, P.L. 91-205, is geared to barrier-free mass transportation in the Washington, D.C., metropolitan area.

Citizens who want to work to push back architectural barriers in their communities should recognize that this Federal legislation leaves a great many types of buildings outside its scope. A later section of this Syllabus will explain how to organize to seek barrier-free amendments to building codes and ordinances in your community, and to secure their enforcement. What follows, therefore, is aimed chiefly at describing the kinds of

[5] Under a $256,000 grant from the Department of Housing and Urban Development. It is centered in the School of Architecture and the All-University Gerontology Center. Project director is Edward Steinfeld.

Communities must make sure that appropriate barrier-free provisions are incorporated in locally applicable building codes.

loopholes which must be filled before a totally barrier-free architecture is achieved.

A BUILDING'S PROGRESS: CODES AND ORDINANCES

The shape of most buildings erected in a community is determined by a series of codes and ordinances, as shown in Table 1.

The intent of a code is to protect the health and safety of a building's occupants and the neighbors. The code sets minimum standards for design, construction and maintenance. It covers new construction and major rehabilitation as well as modest repairs and alterations.

Codes are either "prescriptive," i.e., they stipulate the kinds of materials and construction permitted, or of the "performance" type—a far rarer sort which calls for a specific standard, such as loads; acoustic environment; fire flame spread, etc., to be achieved. Such a code leaves the means of meeting these standards to the discretion of the architect, builder and product manufacturer, but the results must be proven to the code enforcement office's satisfaction.

The greatest asset of this second

TABLE 1. Listing of Regulations Typically Determining Building Construction in a Community

TYPICAL BUILDING TYPES	P.L. 90-480 as Amended; Federal Property Regulations	Federal GSA Construction Standards	Locally applicable building code**	Zoning ordinance	Health Code (State & Local)	Housing Code (1–2 family dwellings)	Housing Code (Multiple dwellings)	Fire-safety Code	Plumbing Code	Electrical Code	State Housing Construction Corp.	State Educational Construction Authority	Regional Hospital Planning Council	FEPM (HEW) Construction regulations	Veterans Administration Construction Standards	Subdivision regulations	FHA Property Standards	OSHA regulations	Regulations of private food, service, hotel, retail, theater, service station chains	Insurance companies
Federal Buildings	X	X		X														X		
Other Public Buildings	X*		X	X	X			X	X	X								X		
Hospitals	X*		X	X	X		X	X	X	X			X	X	X			X		X
Schools	X*		X	X	X			X	X	X		X						X		X
Colleges	X*		X	X	X			X	X	X		X						X		X
Churches			X	X	X			X	X	X								X		X
Housing	X*		X	X	X	X	X	X	X	X	X				X	X	X	X		X
Theaters	X*		X	X	X			X	X	X								X	X	X
Industrial Plants			X	X	X			X	X	X								X		X
Shopping Centers and Other Commercial Buildings			X	X	X			X	X	X								X	X	X

* Where Federally financed
** May incorporate State architectural barrier legislation

kind of code is that it opens the door to new technology and actually encourages innovation, whereas changing a prescriptive code to admit a new material or process usually runs into resistance from suppliers, building officials and others who have become used to working under a clearcut, established set of rules.

Codes are usually supplemented by requirements; these are interpretations by regulatory agencies or individual reviewers of unclear or loosely defined codes.

As Table 1 shows, a great many codes can be brought to bear on a particular project. Underlying all the specialized codes applied by interested fund-granting or lending public agencies, there is always a basic code that determines how buildings in a community are to be designed and built. Communities usually adopt one of three approaches:

(a) They devise and promulgate their own code (usually large cities).

(b) They adopt a building code published by the State.

(c) They adopt one of the four national "model" or proprietary codes, devised originally by fire-insurance companies eager to ensure the safety of their investments. Today communities are free to change these model codes to suit their own needs, adding or deleting provisions as they see fit, including barrier-free clauses. These codes are not valid until a political subdivision with properly delegated police power formally adopts it.

The community's basic building code is always, as Table 1 shows, linked to a series of adjunct codes that cover electrical and plumbing requirements and to others, such as the housing code, which relate to particular building types.

Special barrier-free provisions should be developed for approval and insertion into the appropriate sections of the various codes that determine building designs in the community.

The variety of approaches described above makes it unlikely that two communities in the country work under an identical code. Typically, before a permit is issued for construction of a building, the architect must review the applicable standards, include them in his design, and submit the drawings and specifications from which the contractor will erect the building for review by plan examiners at the community's building department and by any other officials who have jurisdiction over the type, location or financing of the building. After all these impose their stamps of approval—and the process is often slow due to differing requirements that must be reconciled—the building is assigned, through bidding or negotiation, to a contractor.

Before anyone can move into a building or a landlord can even offer to rent apartments, a local authority, usually the building department, must issue an occupancy permit. This permit is based on previous visits to the construction site by building inspectors who must ensure compliance with the drawings and specifications for which the original building permit was issued.

[An excellent guide for code adoption and enforcement prepared by Daniel M. Taylor is listed in the Codes, ordinances and regulations section, Chapter IV of this Syllabus].

THE MASSACHUSETTS ARCHITECTURAL BARRIERS BOARD

In spite of the administrative problems occasionally involved, several states and cities are doing an excellent job. A number of states have established agencies specifically charged with making barrier-free legislation work. Massachusetts, for example, now has an Architectural Barriers Board. This board was created in its present form in 1974 by the State legislature as an agency in the Department of Public Safety. It writes and enforces its own regulations for new buildings, which then become part of the Massachusetts State Code. These same regulations apply whenever an addition exceeds 20% of the floor area of the initial building; the entire building must then be made to comply.

The jurisdiction of the Massachusetts board is one of the broadest in the land. It supersedes all local provisions, unless those are tougher. It covers all public buildings, and how it defines these is worth a close look:

> "Public buildings" (are) buildings constructed by the commonwealth or any political subdivision thereof with public funds and open to public use, including but not limited to those constructed by public housing authorities, the Massachusetts Port Authority, the Massachusetts Parking Authority, the Massachusetts Turnpike Authority, the Massachusetts Bay Transportation Authority, or building authorities of any public educational institution, or their successors; and privately financed buildings that are open to and used

To make accessible our huge inventory of existing non-accessible buildings, several states insist that any remodeling include measures to bring such buildings to barrier-free status.

by the public. (Author's italics)

Buildings that are open to and used by the public shall include but not be limited to the following buildings: transportation terminals, institutional buildings, commercial buildings exceeding two stories in height in which more than forty persons are employed, buildings having places of assembly of a capacity of more than one hundred and fifty persons, hotels, motels, dormitories, public parking garages or lots with a capacity of twenty-five or more automobiles, public sidewalks and ways, public areas of apartment buildings and condominiums containing twelve or more units and of funeral homes, and rest rooms and public areas of shopping centers and restaurants.

Clearly, this leaves very few buildings exempt. As to powers, starting in January 1975 this board was given the power to oversee local inspectors in enforcing the regulations, and can start court proceedings to compel compliance. It states further that in hotels, motels and apartments with 20 or more units, at least 5% of units must be accessible to and usable by physically handicapped individuals.

Finally, the Massachusetts Department of Community Affairs is running local inspectors through a training course for barrier-free design compliance.

This description is detailed to show what a regulation with teeth is like; procedures for mounting the required effort are covered in Chapter III of this Syllabus.

Certain other states, such as North Carolina, Iowa, Illinois, New York and California, have state laws coupled with strong enforcement programs. Still others, including Illinois, are about to strengthen existing provisions.

THE CHICAGO CODE AMENDMENTS

Among the large cities having their own municipal codes, Chicago recently

"Signs hung as low as 6'8" are a danger to the blind."

strengthened its code with a series of strong amendments. These amendments also tackle head-on the issue of making existing buildings barrier-free. Any structure over 15,000 square feet that undergoes modernization costing more than half as much again as the original structure must be made totally barrier-free. The amendments are aimed chiefly at handicapped in wheelchairs; they will be expanded in the future to cover other handicaps.

The Commissioner of Buildings of the City of Chicago ascribes the strong ordinance to pressure by a powerful Mayor's Advisory Committee representing the various interests in the city, to intensive research done in the city architect's office, and to strong support by Chicago's influential medical establishment.

All this should in no way be seen as ignoring other barrier-free legislative and compliance efforts under way at all levels of government: many towns, cities, states and agencies of the Federal government are at work seeking to improve the state of barrier-free design in their jurisdictions. This activity is paralleled by continuing research under way at rehabilitation institutes, hospitals and medical schools throughout the country to enlarge the state of knowledge about disabilities and how they affect the functional needs of disabled people.

THE INCOME TAX CREDIT INCENTIVE

Another impetus or incentive for barrier-free design has taken the form of legislation to give private business an income tax credit for omitting or removing barriers. North Carolina, for one, now has such a law. Revenue losses are minor, largely because, as a later section shows, barrier-free provisions cost very little, especially when incorporated during initial construction.

Tax incentives work especially well for privately held existing buildings, which are often outside the scope of barrier-free laws. Where planned new buildings are also covered by a tax provision, the issue has been raised that builders should not receive a tax credit for making a new building barrier-free when most codes require them to do so anyway.

These examples have been selected to provide a typical cross-section, across all levels of government, of efforts to improve the status of handicapped individuals with respect to entry and use of buildings.

2. Typical Barrier Problems of of the Handicapped

The goal of barrier-free design, as seen by most U.S. authorities in the field today, is "autonomous functioning" of the handicapped individual. In other words, any person with a handicap should be able to participate in such normal activities as acquisition of goods and services, living and employment, leisure, entertainment and schooling without help. [This point, as has most of the discussion thus far, clearly applies only to non-institutionalized persons, that is, those not confined to a hospital, nursing home or rehabilitation center.]

This chapter therefore describes the kinds of barriers which hamper autonomous functioning. Chapter III will show different ways in which you may help remove them.

"INTERDEPENDENCE" OF BARRIER-FREE DESIGN

Keep in mind a crucial principle that underlies all barrier-free planning. This is known as "interdependence of prosthetic devices." In simpler terms, the principle insists that all prosthetic devices—a broad term that covers everything from artificial limbs to ramps to accessible toilets to raised numbers on elevator buttons—be linked in a continuous sequence.

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In other words, it does no good to have a barrier-free toilet stall on the second floor if the only way to get to it is up a flight of steps.

The following discussion will help you become aware of and visualize specific kinds of common barriers. They are arranged according to an individual's typical progression up to and through the building. They must be seen as part of the whole, and are broken down here for convenience only. The listing of barriers is not intended as a checklist, but rather to offer a composite profile of barriers that typically face a handicapped person.

LISTING OF COMMON BARRIERS

1. Parking and approaches to building entrance.

PARKING: Space too narrow to permit transfer to wheelchair or crutches. Space not level. A curb or step from space to paved walk. Parking meter out of reach.

APPROACH: Street between parking space and building entrance. No curb cut or traffic light at crossing. Curb cut blocked by a car. No snow removal. Step between sidewalk and entrance level. Ramp, if provided, too steep for wheelchair or crutches.

ENTRANCE: Doors too narrow to admit wheelchair. Revolving doors which operate while flush side doors are locked. Distance between outer and inner door too short. Excessive pressure needed to operate doors.

2. Travel within building.

STAIRS: Steps open or with projecting nosing under which toes may be caught. Risers exceeding 7 in. Handrail too high or low to use, or hard to grasp due to its size or shape, or not extending beyond steps.

ELEVATORS: Entrance too narrow to admit wheelchair. Cab's floor level out of alignment with building floor. Controls for upper floors out of reach. Buttons flush, precluding unaided

Barrier-free provisions in a building and its site must all be linked together: It does no good to have an accessible toilet if the only way to reach it is up a flight of stairs.

use by blind. Audible arrival signal which doesn't tell blind whether cab is on way up or down. Cab size too small for wheelchair.

FLOORS: Floors between different parts of the building not level and connected by steps. Floors slippery or carpeted with deep-pile carpeting.

3. Services.

REST ROOMS: Closest accessible rest room three floors down, or for the other sex only. "Modesty barriers" (two doors in sequence) situated so wheelchair user must have both doors open at same time to pass through. Toilet with door that scrapes the sides of a wheelchair passing through. No free space for a wheelchair to turn.

WATER CLOSET: Toilet stall door too narrow to admit wheelchair. No grab bars either at the side or rear of the stall. Water closet seat too low for transfer.

LAVATORY: Clearance below bowl too small to permit wheelchair to slide under. Uninsulated hot water line. Towel bar, soap and paper towel dispensers and disposal out of reach.

WATER FOUNTAINS: Spout and controls out of reach. Fountain in alcove too narrow for wheelchair.

COIN-OPERATED TELEPHONES: Nearest phone two floors up or in an enclosed booth. Free-standing, but lacking space beneath for wheelchair. Coin-slot, dial and handset out of reach.

CONTROLS: Windows, draperies, heat and light and fire alarms out of reach of persons in wheelchairs, or so constructed as to be inoperable by those with physical or coordination disabilities.

4. Hazards.

GENERAL: Doors leading to boiler rooms and other hazardous spaces not identifiable by the blind. Floor

access panels or holes left unprotected. Gratings and joints in paving which snag wheelchair wheels.

ALARMS: Signs, fixtures or cantilevered building elements hung so low as to be a danger to the blind. Changes in level and other hazards in and out of the building unlit at night. Fire alarms solely audible, neglect the hard of hearing. Corridor exit signs not distinct enough to be distinguished by partially blind persons.

BARRIERS UNIQUE TO CERTAIN BUILDING TYPES

In addition to these typical barriers, any one of which can deny some individuals access to the entire building, there are other barriers peculiar to certain kinds of building. The following lists present these by type of building. Added to the already serious barriers found in most buildings, these special obstructions are one more kind of obstacle between handicapped individuals and the mainstream of life. Like the previous list, this is not designed as a checklist, but rather to provide a good overview. The resource list in Chapter IV offers more detailed design treatment of these building types.

5. Housing.

(Includes single family homes, apartments, hotels and motels, and dormitories)

KITCHEN: Cabinets and cooking areas reached only by parking wheelchair parallel to counter. Storage areas are too high or too low. Door swings which obstruct free chair movement.

MOTEL/HOTEL/GUEST ROOM: Arrangement of bed and other furniture which obstructs movement of wheelchair or prevents transfers.

BATHROOM: Shower without grab-bar, seat, safety controls, water overflow controls, non-slip surface.

DINING ROOM: Table undersides too low to permit wheelchair to slide under.

BEDROOM: Mattress too low for transfer.

6. Schools and universities.

LECTURE HALLS AND AUDITORIUM: No special level station for wheelchair. No existing seats removable to accommodate wheelchair. Aisles to stage or dais stepped, not ramped. Access by turnstile only.

LABORATORIES: Work stations permit only "parallel" parking of wheelchair. No low workbench provided. Aisles too narrow for wheelchair.

PHYSICAL EDUCATION: Lockers inaccessible. No special toilet and shower facilities.

CAMPUS: Travel between campus buildings involves steps, steep ramps, delayed winter snow removal.

7. Churches, restaurants, stadia. The handicapped man or woman will also usually encounter barriers in most places of worship, shopping and public entertainment. In a church, pews will be laid out so the aisle is the only place for the wheelchair, and transfer to a pew is not feasible. In a restaurant, seating is in booths, tables lack sufficient clearance beneath, toilets are not accessible. Seats in football stadia can often be reached only via stairs. A handicapped person's

selection of shops and department stores is limited by the usual common barriers in parking, approach, clearances and facilities.

If clergymen, ticket-takers at concerts and sports events and managers of downtown department stores say they know of few or no handicapped souls in their communities, it is no wonder—the handicapped are often confined to their houses by barriers throughout the community.

THE SPECIAL PROBLEMS OF TRANSPORTATION TERMINALS

Another category of buildings, with its own special barriers, is the airport, bus terminal, or railroad or subway train station. Omitting for now the problem of access to the transit vehicle, the terminal building or station itself poses special barrier problems, over and above those a handicapped individual will find elsewhere. Travel-oriented facilities, more so than others, require sharp and sudden changes of level, long walking distances and such focussed checkpoints as baggage inspection points and turnstiles.

Moreover, the handicapped person will tend to be encumbered with luggage and, because of typical crowds, emotional anxiety will be added to the purely physical obstacles.

Finally, because of the many choices of direction, gates, tracks, etc. open to the traveler, the person handicapped by a visual or hearing impairment, will require (but not always find) the big, clear and audible signs needed to locate and reach the proper spot. (The Department of Transportation has issued an excellent booklet on this subject, entitled Travel Barriers.)

PRODUCT DESIGN: WHAT PRICE A BETTER "MOUSETRAP"?

People are often handicapped not so much by their afflictions as by the design of products they have to deal with daily. When a person cannot open a door because limited twisting motion in his wrist prevents him from turning the knob, our culture says *he* is handicapped. But redesign the door knob so it requires no twisting motion, and he opens it easily. The handicap is no more. So the question arises: Which really had the handicap, the person or the door?

That is the well-stated theme of a report resulting from a 1974 Armco Corporation-sponsored student design program aimed at raising the level of industrial design of products to ease life for the handicapped.

This is surely a vital aspect of barrier-removal in buildings. Most products—door handles, water fountains, television and appliance controls, even packaging—are based on criteria derived from so-called "normal" groups. Pushing for development of design criteria and standards that will accommodate most classes of handicapped persons will result in creation of a far more universal product. For example, a door handle requiring downward pressure instead of a twisting motion will help not only those with loss of hand function but all able-bodied people, especially those with loads.

IMPROVING THE STANDARD WHEELCHAIR

A special focus for improvement is the standard wheelchair. A representative of the Center for Concerned Engineering points to several limitations which can and should be remedied. These are:

1. Excess width (a common model is 26¼ in. wide and can be temporarily narrowed, but not to the width of most current critical doors, such as those to toilet stalls)
2. Spokes (current detailing leads to frequent breakage)
3. Framing (unnecessary weight)
4. Rolling resistance (low efficiency for the amount of energy input, especially outdoors when in contact with normal coarse surfaces)
5. Poor traction in snow
6. Curb climbing (difficult except where curb cuts)
7. Length (hampers indoor maneuvering)
8. Stair climbing (the hardest problem to solve, especially if the chair is also to be used on level surfaces)

The giant in the market is the English firm of Everest and Jennings and for this company, as for the large automobile manufacturers, retooling for a major redesign is a big financial step. Despite its drawbacks, the present "standard" chair does have the advantage of being folded to fit behind the seat of a two-door car. Any new design that abandons this asset, says the Center representative, is on the wrong track.

Several designers have tried their hand at improved wheelchair controls. The Earl of Snowdon has designed a chair which can be driven by one arm; it requires no finger mobility; it goes forwards and backwards and pivots in its own length (29½ in.); it will carry a 250 lb. man up a 1 in 12 slope. A battery pack provides power for one mile of travel. The chair, which sits on its own platform, can be raised and lowered and even the seat may be interchanged.

Herman Miller Research Corporation has, on a pilot basis, adapted a van which will allow a quadriplegic with no motor capability from the neck down, to employ it as a traveling office using a specially designed chair (an attendant goes along solely to drive the van).

Developments in this area of industrial products should be closely monitored. Improved products are not a substitute for good barrier-free architectural design, but they are an important ingredient of the unhampered mobility of handicapped people.

If you now have a sound feel for the strictly physical problems faced by the handicapped, consider these other

Precluding barriers through careful initial design rarely adds more than .1% to the cost of construction. Removing them after construction can be considerably more expensive.

aspects: one entails the status of existing buildings, another the issue of cost of a barrier-free environment, and a third the matter of life-safety in building.

WHAT TO DO ABOUT EXISTING BUILDINGS

Nearly all existing buildings, since they were largely erected before the barrier-free movement began to make itself felt, are replete with barriers. Legislation, as well as court decisions, at first focused on new construction but is now intervening more and more in making existing buildings barrier-free. State codes like that of Massachusetts and municipal codes such as Chicago's stipulate, with certain provisos, that any remodelling on buildings to which the public has access must be made barrier-free. North Carolina has made a $2 million fund available for remodelling state facilities to make them accessible.

Such regulations in general recognize three classes of projects:

1. Those projects in which alterations affect a very small area or the extent of alterations over a large area is very superficial, such as painting.
2. Those projects in which alterations are substantive, such as rewiring and air-conditioning, or entail a major added new structure. In those cases the entire complex of buildings must be raised to barrier-free standards.
3. Those intermediate situations in which the work is substantial enough to justify barrier removal but not extensive enough to require a total adaptation. A typical measure is to stipulate a percentage range—usually between 25% and 50% of the cost of the original structure. If the cost of modernization or addition falls in this range, only the area of the work must meet barrier-free criteria. Sometimes key areas, such as entrances and toilet access, must be accommodated.

INSPECTOR TRAINING

Rigid interpretation of building codes by officials who are too unsure of their ground to interpret barrier-free code provisions fairly can have the opposite effect from that intended, and discourage modernization of any sort. Inspectors must become more sensitive to the social implications of their decisions.

To overcome inertia, inspector training programs should be designed to have primary impact on the local operating level of code enforcement. Course subject matter should cover not only architect-designed new construction, but also ways to deal with alteration work of all kinds. Training should also cover the problem of approval of

(a) revised building plans, and
(b) construction erected (legally) without involvement of an architect—usually rural buildings, and additions below a certain dollar value.

Moreover, inspectors should be geared to make follow up inspections to ensure continuing barrier-free status.

The more ambitious inspector training programs have been organized at the state level. Massachusetts, as we saw earlier, plans both to train local inspectors and to give broad interpretive powers to its professionally staffed barriers board.

North Carolina budgeted $50,000 in the first year of a program designed to both train and motivate inspectors in applying the State's barrier-free code provisions.

DOES "BARRIER-FREE" COST MORE?

As you move further into the architectural barriers field, you will find that barrier-free construction or remodeling is rated variously as less costly and a great deal more costly than present practices.

The most recent detailed study on the issue was made in 1967. The National League of Cities took a detailed look at three actual buildings typical of those requiring access by the public——a civic center, a city hall and a multi-story hotel. McGaughan and Johnson of Washington, D.C., the architects retained to do the study, found that in none of these three buildings would the estimated cost of deleting barriers at the initial design stage have exceeded one tenth of one percent of construction costs.

The 19 architectural elements that were added or modified to make the barrier-free estimate were:

- Concrete access-ramps
- Ramped sidewalks
- Concrete access bridges
- Wooden ramps
- Access to swimming pools
- Water fountains
- Public telephones
- Concrete retaining walls
- Curb cuts
- Grading
- Toilet stalls
- Shower cubicles
- Lavatories
- Bathrooms
- Door clearances
- Elevators
- Automatic doors
- Instrumentation and controls
- Tactile and audible warnings

The architects analyzed seven other hypothetical buildings. These were "designed" to reflect various typical low-rise and high-rise formats. Six of the seven could have been originally built barrier-free for less than 0.5% over estimated construction costs; the seventh, a two-story building, would have cost 2.57% more, as an elevator had to be added. Modifications needed to make these buildings barrier-free after construction would have cost, at most, 1.0% over original costs.

In many cases deleting a barrier can actually net a credit to a building's construction budget as, for example, by

doing away with a platform and steps and instead building up a ramped sidewalk to the entrance.

WHEN "AFTER-THE-FACT" COSTS CONSIDERABLY MORE

Under certain circumstances the penalty for procrastination can be great. Washington's Metropolitan Area Transit Authority is paying an additional $65 million (1.6% of total cost) to make the stations in its new subway system barrier-free, after having originally started to build without elevators. San Francisco's Bay Area Rapid Transit system had to provide elevators far along in its construction schedule, for a sum of over $16 million (about 1% of total cost).

DOES LIFE SAFETY CONFLICT WITH BARRIER-FREE DESIGN?

Awareness of this issue is important. Exit through a vented, enclosed fire stair will save the able-bodied. Handicapped individuals must rely a) on elevators, which are risky in cases where certain heat-sensitive controls cause elevators to stall at the fire floor; b) on aid from the able-bodied; or c) on the presence of "refuge" compartments on each floor designed to provide protection long enough to allow a fire to be extinguished.

Alternatives, such as chutes or a "safe" area on enclosed stair-landings, have also been suggested. All have drawbacks. Handicapped individuals will not be apportioned equally enough by floor to equalize demand for secure space on stair landings in the case of fire. Chutes are of little use above three stories.

In short, this problem, with its serious cost implications, is still unresolved, and further research into fire "refuges" is needed.

HOW MANY IS ENOUGH?

Most codes and guidelines suggest minimum quantities or percentages of barrier-free facilities. Typical requirements or recommendations are as follows:

Parking places: 5%
Coin phones: 1 per bank of phones
Toilets: 1 per sex per floor
College dormitory rooms: 2%
Motel/hotel rooms: 5% (Massachusetts)
Laboratory work stations: 1 station or 1%
Spaces in auditorium: 1%

You will often hear the argument that a barrier-free environment benefits handicapped and able-bodied alike, and therefore should be part and parcel of any good design. And, indeed, some accident insurance statistics tend to bear this out, in that a barrier-free building appears to be safer due to a lesser use of stairs; clearer signs; better site lighting, etc.

But the issue goes deeper. By taking a long range, "life-cycle" view of building, the odds that a user, occupant or visitor will never be handicapped—if only for a short time—are very long. In other words, sooner or later, unless the building is free of barriers, someone is going to be denied access or use.

Two directions are then open. One is to make a determination according to the expected use to which the building will be put. Clearly, an apartment building for the elderly must have all its facilities barrier-free. An infantry barracks could be less pervasively barrier-free in its design. A large shop employing many blind persons would approach barrier-free design one way, an aircraft factory with a low ratio of blind employees another.

ADAPTABLE DESIGN

A second kind of approach is emerging, however. Known as "adaptable design," it allows an entire building to be designed so any or all spaces and facilities can if necessary be made accessible by adding or subtracting design elements. For example, a toilet is so sized and laid out that it can be adapted for side access and transfer. Attachments are incorporated into the initial structure so that prosthetic aids such as grab-bars can be simply attached as needed. Toilets can be designed so the seat can be raised or lowered to any reasonable height. Auditorium seats should be removable to make room for varying numbers of wheelchairs.

This concept allows barrier-free provisions to be implemented where and when they are needed, and avoids the dilemma of answering the question, "What is a good ratio of barrier-free provisions in a building?"

DOES INCREASED PRODUCTIVITY JUSTIFY BARRIER-FREE DESIGN?

Another argument frequently encountered deals with the economic value to the nation of raising the employment opportunities of handicapped men and women by reducing barriers at places of work.

No one really knows how many of the unemployed handicapped are willing and able to work. Taking even the lower estimates as to the numbers of non-institutionalized handicapped in this country, however, the net increase in gross national product and tax revenues would be considerable.

But does this in itself make the case for reduced barriers? Any handicapped man or woman could quite properly resent having the argument for banning barriers based purely on financial grounds. Economic benefits should more correctly be seen as the results of a totally accessible environment; they can hardly in fairness be used to build up the case alone.

3. The Answers and How to Use Them

PART A. An Introduction to Minimum Standards

You have seen the background and highlights of the movement towards a barrier-free architecture, as well as the problems and issues faced by handicapped men and women in this country. This chapter presents some of the tools that will help overcome or resolve those barriers. These tools can be used directly, to promote a greater degree of barrier-free design and compliance, or as a starting point for a more intensive program of research prior to action.

The information in this chapter is divided into two parts:

(a) An introduction to minimum standards required for a barrier-free environment.

(b) A look at methods you can adopt or adapt to bring about change in your community.

Minimum standards are just that—design objectives that happen to have a consensus at a particular time. Laws and codes incorporate these standards by reference. As social, cultural and economic attitudes change, so do standards. These new standards can and should simply be incorporated in existing statutes by amendment or substitution.

THE "OPTIMUM" STANDARD

You will sometimes encounter another type of standard—so-called "optimum" standards. These differ from minimum standards in that they try to set down ideal requirements. For example, a minimum standard is not to have ramps exceed a slope of 1 in 12; an optimum standard is to have no ramps, and instead to have all approaches level, with differences in height accommodated by lifts and elevators.

To reach this ideal condition will require either a greater investment in costlier elevators, or else a highly efficient, low cost wheelchair designed so as to take all the hazards out of negotiating steep ramps. Either way, optimum standards are no more fixed than minimums; they are tied to the development of improved or more economical devices and equipment; to widely available medical advances in rehabilitating those men and women with handicaps, which reduce the need to do away with some barriers; and third, to any new research findings on the functional handicaps of people with disabilities, which may cause "optimum" standards to go up or down. Any combination of these developments will cause standards to change.

THE OBJECTIVES OF BARRIER-FREE STANDARDS

Barrier-free standards seek to:

(a) Determine the size, shape and location of spaces within or adjacent to a building, such as parking, stairs.

Minimum standards should not be confused with optimum standards. Minimum standards are those on which there is a favorable consensus at a particular time. Optimum standards reflect the latest state of the art.

(b) Control the size, shape and location of objects, such as door handles, rest rooms, toilets, water fountains, control knobs.

(c) Indirectly place a limit on both personal energy output by the handicapped person—by limiting, say, the angle of ramps—and the degree of hazard he is exposed to, as by modifying door hardware design to alert blind people whenever doors lead to hazardous spaces.

(d) Specify the size and nature of signs and signals that guide a handicapped person as he enters and uses a building.

HIGHLIGHTS OF CURRENT STANDARDS

The section that follows is not intended to serve as a detailed barrier-free design manual. You will find a selection of those listed in Chapter IV of this Syllabus. But the section does present, in quantitative terms and with useful drawings, highlights of our current standards. It can also serve as the basis for a community barrier-free building survey, described later in this chapter.

The section is divided into logical parts related to the way a handicapped person typically approaches and uses a building.[6]

1. Parking and approaches to building entrance.

PARKING: Place near building. Identify for use by handicapped only. Make level. Minimum width: 12 feet. Clear step-free route from reserved space to building entrance.

APPROACHES: 5 feet minimum width, 1 in 20 maximum gradient. Non-slip surface. Curb cuts if road crossing required. No downspouts discharging onto walkway. Change in paving texture to alert visually impaired, especially when there are ramps or curb cuts.

RAMPS: Avoid. If inevitable: 1 in 12 maximum slope. Handrail on at least one side 32 inches above ramp surface and to extend 12 inches beyond top and bottom of ramp. Non-slip surface. Snow-melting apparatus if out of doors. 6 feet of straight clearance at top and bottom. Level rest platform at 30 feet intervals and at turns.

ENTRANCE: One primary entrance barrier-free, with access to elevators. 32 inch clear door opening. View panel at 3 feet height if two-way door. Less than 8 pounds of pressure needed to operate. Door sill flush with floor. If vestibule, 6 feet 6 inches between doors. Adequate night illumination.

STAIRS (EXTERIOR): No protruding nosings. Non-skid surface. Lit for night time use by ambulatory handicapped. Riser: 5¾ inches (maximum), tread: 14 inches (minimum). Handrails 32 inches high, to extend 30 inches horizontally at top and bottom.

2. Movement within building.

STAIRS: No protruding nosings. 7 inch maximum riser height. Handrails 32 inches above tread at face of riser, extend 12 inches beyond top and bottom parallel to floor. Handrails circular or oval, 1¾ inches to 2 inches thick.

ELEVATORS: Install in all buildings of two or more stories. Cab dimensions and cab doors to conform to wheelchair dimensions and movement constraints. Minimum cab size: 5 feet deep by 5 feet 6 inches wide. Doors to have safety edge with sensing device. No control higher than 4 feet from floor. Control buttons to have raised or notched information adjacent to buttons.

CORRIDORS: 5 feet minimum.

FLOORS: Non-slip surface. Differences of level connected by ramps.

DOORS: See "Entrance," above.

3. Services.

TOILETS: Stall size 3 feet wide by 5 feet deep (minimum) with an outswinging door providing 32 inches clearance. (4 feet 10 inches × 5 feet for lateral transfer). Toilet, wall-mounted, with seat 17 inches from floor. Grab-bars (1½ inches in diameter and 1½ inches from walls) on both walls, 33 inches from floor. Add rail at rear if stall over 40 inches wide.

LAVATORY: Clearance to bottom of apron: 2 feet 6 inches (minimum). Faucet handles easy to operate. Shield hot water line and trap. Mirror bottom, soap and towel dispenser and other accessories not over 40 inches above floor. Do not slope mirror.

URINAL: At least one fixture 15 inches above floor.

[6] With acknowledgements to John C. Worsley AIA, California State architect, and to the New York State University Construction Fund, from whose checklists these data are drawn.

WATER FOUNTAINS: Upper edge of basin not over 3 feet above floor. Controls and spouts at front. If recessed, recess not less than 3 feet wide.

COIN PHONES: Do not place phone in booths. Dial, coin slot and handset between 3 and 4 feet from floor. Hearing disabilities accounted for.

CONTROLS: Light and other switches between 3 feet and 3 feet 6 inches from floor, with unobstructed access. Level handles (versus rotating). Foot operation included where possible.

4. Hazards.

OBSTRUCTIONS: Low hanging door closers, signs, ceiling fixtures: 7 feet (minimum) clearance above floor.

LIGHTING ON RAMPS: 1 foot candle (minimum).

ALARMS: Visual signal to alert hearing-impaired. Audible signal to alert visually impaired.

The preceding standards are geared to three relatively fixed design conditions: the man or woman in a wheelchair; the person on crutches; and the blind.

Wheelchair dimensions and maneuverability are shown on page 20. For an individual on crutches, minimum width between crutch tips is 36 in.

THE BLIND INDIVIDUAL

When properly trained, blind persons have a somewhat greater freedom of mobility than those who are confined to wheelchairs. Indeed, there is a strong faction that opposes any kind of special provisions, in the belief that proper training makes them unnecessary. Barriers, they feel, are a problem only for those who are not fully rehabilitated and for elderly persons with a loss of sight.

More widely held is the view that by including certain kinds of barrier-free design provisions, architects make access to and use of buildings easier for not only the blind, but for other categories of handicapped too, especially the wheelchair-bound. Typical of this is grade level entry and the elimination of steps.

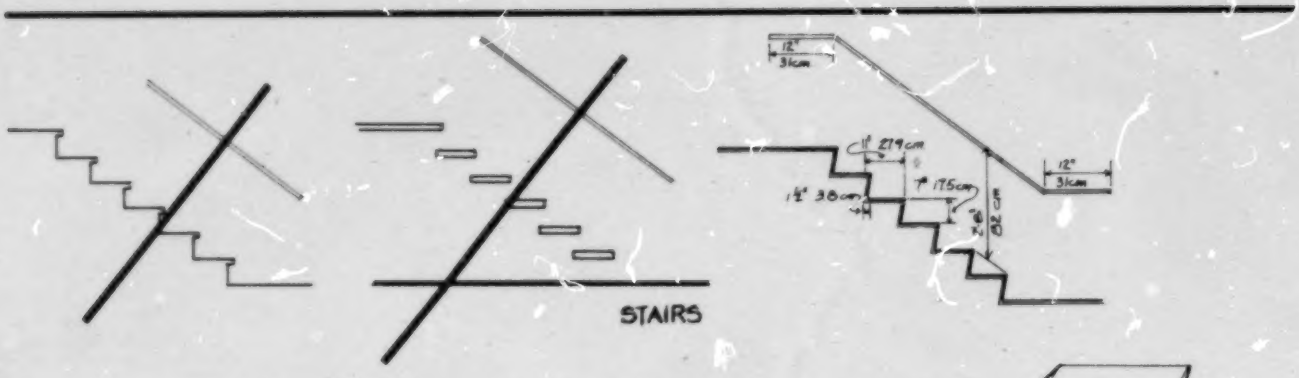
Other design provisions to expand access to the blind should include:

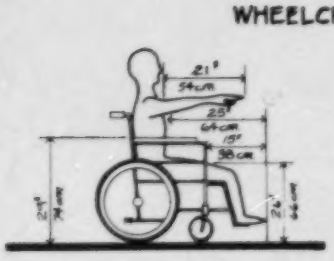
(a) Floor texture changes. A standard scale should be developed, with "roughest" texture equal to "most hazardous." Endless "seamless" surfaces of tile, carpeting or marble are confusing to blind people, especially in such hazardous transition locations as sidewalk-to-street and landing-to-stairs.

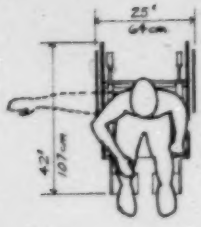
(b) Color contrast. Since many individuals who are classified as blind in fact have some usable vision, color contrast is a useful way to warn against hazards. Even those with 3% vision can react to color change, especially when of high contrast, such as dark blue versus beige.

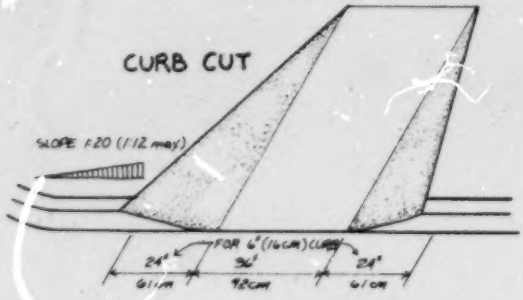
(c) Elevator indicators. Some kind of acoustic indicator would help the blind know whether the elevator they have called is heading up or down. (A two-tone signal has been suggested—high-pitched for "up", lower pitch for "down").

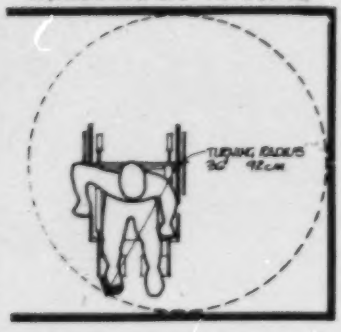
In any case, many authorities on the problems of the blind feel that mobility training for the blind should focus not only on touch and the cane but also on developing greater sensitivity to such stimuli as sound and air currents.

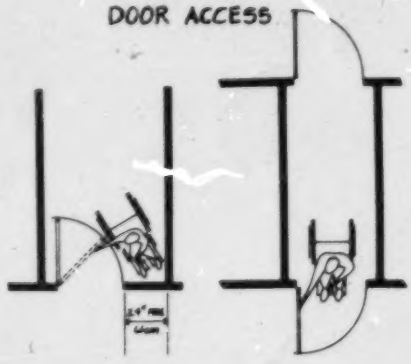


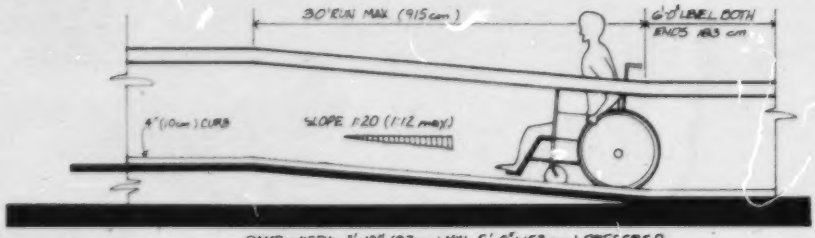












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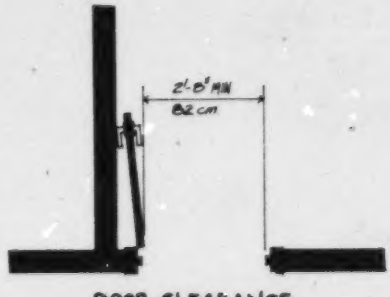

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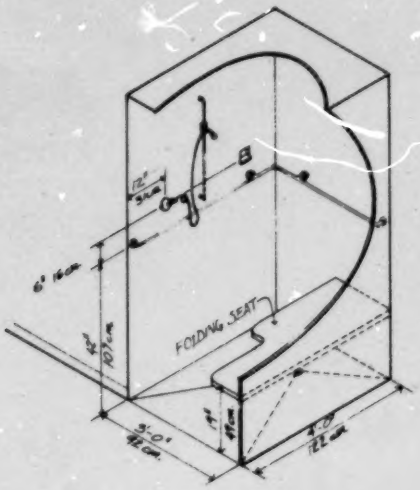

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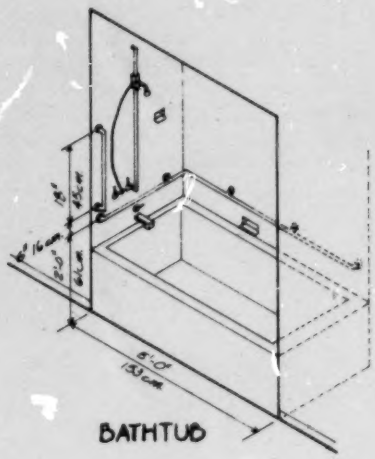

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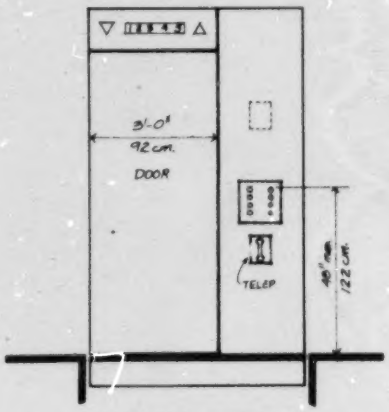

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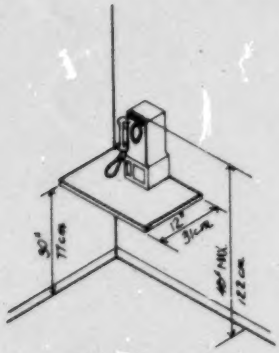

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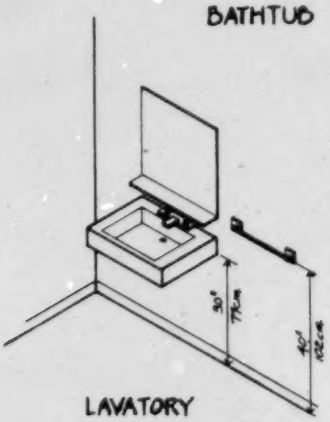

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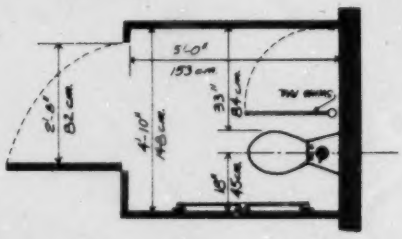

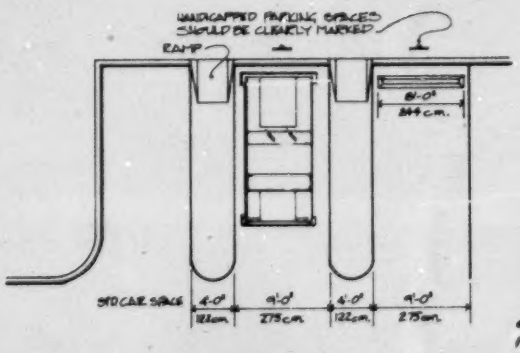

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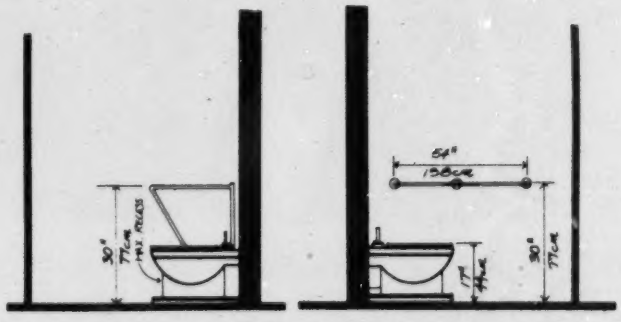

TOILET STALL

PART B. What You Can Do to Organize for Change

What you do as a handicapped or able-bodied concerned citizen in your community spells the difference between a fixed status quo and the gradual deletion of barriers. To date, progress at the Federal, state and local levels has been achieved because (1) certain far-seeing public officials identified accessibility as a key determinant of the life-style of people with long-established disability, and (2) enough citizens and voluntary societies have put pressure on their elected representatives in the Congress, state houses, and city halls, and on businessmen, educators, hospital boards and home builders responsible for erecting the buildings in our communities. This progress will only continue if you sustain and step up these efforts.

Any effort must have a twin thrust: to engender new (or, if needed, revise existing) laws and codes; and to ensure compliance with laws and codes already on the books.

Over the years certain advocacy procedures have been developed to help organize and focus such barrier-free action. The following recommendations describe such methods. Whether you are a rehabilitation professional or an architect, whether you are a businessman, labor leader, educator or spiritual leader in your community, whether you are able-bodied or handicapped, you will find these methods serve you well as a guide to organization and action.

It may be that some of the proposed steps have already been taken in your community. If so, move on to the next stage. In any case, you will no doubt want to adapt the proposed format to fit your local conditions.

1. THE ARCHITECTURAL BARRIERS TASK FORCE[7]

Consider forming a barrier-free architecture task force when you first want to expose the decision-making individuals and groups in your community to the problems of architectural barriers. The aim of the task force is to create public dialogue among these individuals and groups, and to make them aware of their responsibility, both as professionals and as members of the community.

The following two broad categories of individuals should be invited to a task force meeting or series of meetings:

(a) The building industry and business community: architects, contractors, engineers, leaders in business and industry, financiers, realtors, labor union officials and members of local housing authorities. These are chiefly concerned with the practical aspects of accessibility.

(b) The educational community school officials including university groups, the clergy, librarians, members of the communications media (radio, television, newspapers), representatives of local planning and voluntary health agencies and agencies of the disabled (including people who are disabled), medical and paramedical professionals. These people are mainly concerned with the rehabilitation and social aspects of accessibility.

To be strong, a task force meeting must have active participation. Meetings should be kept small to encourage a free exchange of ideas. On the other hand, you may hold several workshops simultaneously after a brief panel discussion among all task force members.

The format of the meetings and the composition of the task force should be determined by a planning committee.

The planning committee. The planning committee is responsible for

(a) securing endorsement of the project by the Mayor, County Supervisor or other prominent officials;

(b) securing a task force leader and panel members;

(c) sending invitations;

(d) developing publicity;

(e) preparing a final report for participants, public officials, and other interested parties.

Steps in planning for a task force.

(a) Prepare a strong publicity program; it will be well worth your time. Contact willing local public relations professionals to tell you what to send and to whom.

(b) Seek the Mayor's endorsement.

(c) Letters of invitation should be individually typed and sent out well in advance of the scheduled meeting. Telephone follow-up is desirable. Enclose a copy of one—two, at most—basic booklets on barrier-free design to provide participants with some background on the problem.

Suggested agenda for task force meetings. There are two possible variations of a basic program. One is aimed at the practical aspects of accessability as they apply to the building industry and the business community; the other at social and ethical considerations.

Variation 1: Practical aspects of accessibliity. Relevant discussion topics would include:

(a) Employment of the handicapped.

(b) Existing legislation.

(c) Do design criteria take into account a) those permanently disabled and b) temporarily disabling conditions affecting everyone? Should they?

(d) Standards: a) Are standards useful? To what types of buildings

[7] The author is indebted to the National Easter Seal Society for Crippled Children and Adults and to the Iowa Chapter, American Institute of Architects for permission to draw from their series of guidelines and experiences in community action techniques.

Any effort to remove barriers in the community must be two-pronged. Barrier-free provisions must first become part of codes and ordinances. Then compliance has to be enforced.

should they apply? b) Can they be applied without detracting from the aesthetics of a building? c) What are the costs involved—to the building owner, the taxpayer?

(e) The elimination of architectural barriers is whose responsibility? Municipal government? State government? Architects? Engineers? Building owners? Financing bodies?

Variation 2: Social aspects of accessibility. Questions for discussion might include:

(a) What are the psychological, rehabilitative and social aspects of architectural barriers—in education, employment, religious expression, participation in social, civic and cultural life of the community?

(b) What new sets of attitudes must the community adopt in its approaches towards the handicapped individuals in its midst?

(c) How should we approach the problem in practice?

(d) Who has responsibility for elimination of architectural barriers?

The point of a task force is to lay the groundwork and obtain public exposure. A more long-lasting basis for community action is the architectural barriers committee.

2. THE ARCHITECTURAL BARRIERS COMMITTEE

A standing architectural barriers committee is intended to spur local interest in eliminating architectural barriers, to serve as the basis for continuing community education, and to organize and oversee such projects.

Recruiting a nucleus of members. For the greatest impact, first recruit a nucleus of key members of the community who are able to reach decision-making audiences and the general public. Include, in particular, handicapped and elderly individuals.

Those audiences should include

(a) Local government (Mayor, councilmen, city planners and legislators); Federal government (representatives of Congress, the Architectural and Transportation Barriers Board, Rehabilitation Services Administration (HEW), Administration on Aging (HEW), Departments of Labor, Transportation, and Housing and Urban Renewal); state and county agencies

(b) Architects and engineers

(c) Building contractors

(d) Interior designers

(e) Librarians

(f) Clergy

(g) Leaders in business, finance, and industry

(h) Merchants' associations

(i) Hotel and motel associations

(j) Restaurant associations

(k) Manufacturers' associations (prime targets are hardware manufacturers, plumbing suppliers, elevator manufacturers, other building product suppliers)

(l) Labor unions

(m) Leaders in education (local school board, college or university board members, deans of schools of architecture, etc.)

(n) Health agencies (agencies serving the aged and disabled—rehabilitation services agencies, workshops and facilities, hospital associations, county medical society, nursing homes, professional associations)

Reaching the media. Try to include on the nucleus committee a few leaders in the media field (executives of local radio and television stations, newspaper publishers or editors, heads of advertising and public relations agencies, etc.). These men and women are not only valuable in helping secure time and space for the educational campaign, but as consultants can help develop a sound educational program.

The statement of need. Develop a statement of need to help recruit influential members of these audiences. The statement should include an explanation of architectural barriers and how they can be eliminated, plus documented support for the premise that many members of the community would be served by the absence of architectural barriers. Ascertain the number of disabled individuals within the community, as you will need this information; to do this, contact public and private health agencies which serve the disabled.

Contacts and follow-up. Contact key people by letter or personal visit. Ask them if they would be willing to participate in committee activities or serve as consultants. If their schedules do not permit even limited participation, try to secure endorsement of the committee and its goals.

Used to create a guide to the community for handicapped people and to test compliance with the law, the community building survey can be a major force in triggering awareness.

Choosing projects and setting priorities. Determine, with the help of new committee members, which projects the committee should assume (in order of priority). (Those described below are suggestions. In the last analysis, the projects you select will depend on the energy and imagination of your committee) Once you have developed a nucleus group and tentatively selected projects, your committee will find recruitment of a broad base of volunteers to become a great deal easier.

3. THE COMMUNITY BUILDING SURVEY

One of the strongest and most ripple-producing projects you can undertake is the community building survey. You may make surveys of buildings on a community wide basis (leading to publication of a guide); or to test compliance with a given law or code countywide or statewide; or to uncover the barrier-free status of a certain building type (such as banks, shopping centers or public schools).

The benefits of the community survey include:

(a) It focuses the community's eyes and ears upon architectural barriers

(b) It creates interest in barrier-free construction

(c) If a guide results, it provides a valuable service to handicapped persons in the community

(d) The survey procedures help introduce volunteers first hand to the barrier problems of the handicapped

(e) It draws the attention of public officials to cases of non-compliance with existing laws, codes and regulations

Whichever approach you take, you will need: (1) a plan to cover publicity, selection of buildings to be surveyed, method of obtaining cooperation from building owners, assignment of volunteers and editorial planning for any resulting publication; and (2) a survey form or questionnaire.

Selection of buildings. For a community-wide survey, it is best to include a representative sampling of all the facilities in the community. You may wish to list all buildings in a particular classification —theaters, for example. When this is impossible because of the sheer number of buildings in a category—as for restaurants—try to include some examples in all price ranges and various areas throughout the community.

Here is an annotated listing of suggested building types:

(a) Banks. include enough banks to cover all types of banking services.

(b) Central and downtown parking. Include those parking lots or garages nearest or most convenient to buildings on your list.

(c) Houses of worship. Select at least one building in each major denomination, and more than one where members make up sizable percentages of the population.

(d) Civic and government buildings. These include city hall, courthouse, post office, library, Federal buildings and the offices of various Federal, state or local agencies such as Internal Revenue, Social Security, Employment Office, with a high incidence of visitors.

(e) Educational institutions. Include schools and colleges which may have programs used by the handicapped or the aged: elementary schools, high schools, degree colleges and specialized schools such as business colleges and trade schools. Not all public schools need be included, but each area of the community should be represented.

(f) Shopping centers. Depending upon the size and number of centers, include one in each general area of the community.

(g) Department and retail stores. The major department stores should be listed. Retail stores can be selected on the basis of special products—hardware, drug stores, etc.—and services—barber, beauty shops, etc.

(h) Hospitals and medical buildings. Include at least one general hospital, with additional ones depending on size of the community. Medical office buildings, clinics or nursing homes are useful to include, as well as social security and welfare offices.

(i) Hotels and motels. Select hotels and motels where most public meetings are held. Consider their services, location and convenience.

(j) Museums. Depending on the size of the community, these might include art museums,

historical museums and others.

(k) Office buildings. Aside from being places of work for handicapped, buildings selected should house the offices of professional services which the handicapped and aging need (doctors, dentists, lawyers, insurance, etc.).

(l) Restaurants. Aim for a representative sampling of expensive, moderate priced and inexpensive restaurants. Include snack bars and sandwich shops.

(m) Theaters. Include representative movie houses, plus other auditoriums in the community used for dramatics, lectures, concerts.

(n) Recreational facilities and parks. Include civic, high school or college stadia or field houses, public parks, and such facilities as YMCA, YWCA, community centers. Also commercial recreation facilities such as bowling alleys, ballrooms, marinas, etc.

Contact with building owners. Contact building owners by letter to get their cooperation in the survey. Follow-up contacts by phone.

Tell building owners that no judgments will be made regarding the total accessibility of the building; only the facts are stated. It is the job of each user of the guide to determine his personal needs with regard to any facility.

Organizing the volunteers. Volunteers work best in teams of two—one measuring, the other recording information. The process of surveying a building takes twenty to forty minutes. An assignment of three to five buildings per team is best, although this may vary.

Give volunteers index cards with the address of the building to be surveyed, name of contact person and most convenient time for survey. Do not, for example, survey restaurants during mealtime, supermarkets during peak shopping hours, etc. Keep a master card file of survey assignments. When filling out survey sheets, volunteers should be specific and avoid generalized statements.

Editing the guide. The most important point to keep in mind when editing is that all information should be listed in the order a handicapped person would find useful when entering a building. Begin with parking facilities and proceed into the building.

> EXAMPLE: Brown's Department Store, 123 W. Iron Street, 357-9640. Off street parking west of building, commercial lot one block North. Passenger loading zone at Iron Street entrance; automatic door 32" wide. Elevator services all floors. Men's restroom in hardware department, first floor, entrance 30" wide, stall door 32" wide. Women's restroom in cosmetic department, second floor, entrance 32" wide, stall door 32" wide. Public telephone 38" from floor located at candy department, first floor. Wheelchair available. Call personnel office in advance for assistance.

Be positive. Stress a building's good features, not its worst. For instance, state "3 steps" instead of "no ramp."

Decisions on format, quality, financing and distribution of a guide can vary widely. Detailed information on those aspects are available from the National Easter Seal Society for Crippled Children and Adults, 2023 W. Ogden Avenue, Chicago, Ill. 60612.

The survey form or questionnaire. The survey form or questionnaire is a basic document you will need to carry out your survey, whether it is to lead to a guide or to a compliance report.

Several formats have been developed. The National Easter Seal Society has a very comprehensive two page survey form entitled "Building Survey to Develop Guides for the Handicapped" (see sample, Appendix A). It comes with a one page instruction sheet and is available in quantities on request from the Society.

The Iowa Chapter of the American Institute of Architects, jointly with the Easter Seal Society for Crippled Children and Adults of Iowa, Inc. and the Iowa Governor's Committee on Employment of the Handicapped, has developed a useful accessibility checklist as part of its pioneering survey to check for compliance of Federal buildings in Iowa with the provisions of Public Law 90-480. It is reprinted with permission as Appendix B.

Surveying specialized facilities. If you wish to survey specialized kinds of facilities, such as a college campus, a high-rise apartment development or a large hospital center, you may want to adapt the

The opportunity for the handicapped to live as rich a life as any other citizen is increasingly being viewed as a civil right, to be protected by legal action.

basic form or develop your own survey sheet. To do this, enlist some modest input from a local architect and voluntary handicapped agency representative. Remember that the underlying principles of barrier-free access are the same for every kind of facility.

A useful basis for evaluating residential facilities will become available sometime in 1976 when the University of Syracuse completes its HUD-funded assignment to expand the present ANSI standard 117.1 to include housing.

4. SETTING UP A WATCHDOG PROGRAM

Once you have a working barrier-free architecture committee in your community, and have prepared and published a guide, you may wish to consider setting up a watchdog program.

A watchdog program is the basis for any continuing effort to eliminate architectural barriers in your community. It consists of a systematic method of contact and follow-up with building owners, architects and builders to ensure that new buildings and building renovations are barrier-free.

The information you need to monitor pending construction activity can be found in Dodge Reports. These are published daily by McGraw-Hill Information Systems, Inc. and contain descriptions of planned construction projects, plus name and address of the owner of the new building, the architect and the general contractor, if selected.

You may be able to gain access to the Reports through an architect or builder member of your committee who subscribes to them. Ask permission to consult his copies. If this is not possible, contact other builders, architects or building officials in your community, explain your purpose and try to work out a fair arrangement.

Those in your watchdog group responsible for checking the Dodge Reports

must relay information to a coordinating person on your watchdog subcommittee. (In some states, such as New Jersey, the State Easter Seal Society prepares Dodge Report findings for its County chairmen.)

After this is done, a volunteer from your watchdog team should make the initial contact with the building owner, architect and contractors to alert these individuals to the issue of barriers and to answer any questions they may have about barrier-free design and construction. This may be done by letter, with a follow up phone call as needed. A great deal of tact is required in making and expanding these contacts. Avoid harrassment. Supply information correctly and promptly.

Follow up is vital. Find out at the proper time if the structure is indeed being erected barrier-free. Consider awards to those that comply.

5. THE ROUTE OF LEGAL ACTION

Legal action is another recourse, as discussed in Chapter I of this Syllabus. It cannot proceed without the kind of information base proposed in this chapter.

The future of the movement to obtain barrier-free rights for handicapped men and women is brighter than it has been in years, but it still faces obstacles. An excellent summary appeared in the Georgetown Law Journal[8]. It strikes a fitting note on which to close this chapter:

> Although concern for the plight of the handicapped may be increasing, they still face serious obstacles in their effort to achieve equal treatment by society. While many areas merit attention, education, physical access and employment are among the most significant. Although there has been little litigation involving the rights of the disabled, possibilities for redress do exist. By carefully selecting strong cases in which the right denied is extremely important, and the discrimination and damage are evident, the handicapped may be able to achieve some success through the courts.
>
> It is nonetheless imperative for the handicapped to continue to focus efforts on Congress and the State legislatures. Legislation ensuring the rights of the handicapped would be the most uniform and far reaching solution to the problems presented. The inclusion of the handicapped among those protected by the Civil Rights Act of 1964 is the most desirable solution on the Federal level. Such an amendment would allow the handicapped access to the Act's complaint mechanisms and to the expertise of its enforcement offices. The enactment of legislation will not, however, be the end of the struggle. Rather, it will be the beginning of a process which eventually must ensure that every handicapped individual has an even start with the rest of society.

The movement towards a barrier-free architecture is proceeding along many fronts. Barriers are being attacked on the

constitutional, the federal and state legislative, and on the local building codes level. The entire philosophy behind the barrier-free movement is gradually shifting to the view that handicapped individuals must be able to live as wide and rich a life as any other citizens, with total freedom of choice as to where they wish to work, play, study and live; and that no man-made negligence must be allowed to prevent this. More and more of the handicapped themselves are entering the fray.

There is still room for progress, though, especially at the local level, where citizens' apathy and lukewarm or uninformed enforcement of codes dilute the legal breakthroughs already attained.

The hope is that as the movement picks up momentum these dark areas too will disappear.

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[8] *Abroad in the Land:* Legal strategies to effectuate the rights of the physically disabled, by Ann Gailis and Keith Susman. Georgetown Law Journal, July 1973.

4. Resources

A. PRINTED AND AUDIO-VISUAL RESOURCES

The following books, pamphlets, reports, articles and films have been culled from a larger volume of materials dealing with the subject of barrier-free architecture. They have been chosen because they are useful, practical, succinct, or offer a challenging or original insight or suggestions. Prices are given where known. Address of the source is listed here only if it does not appear in Section B on agencies and organizations which follows this section.

For your convenience, these resources are arranged in categories, according to topic, slant and use:

(a) General
(b) Design guides
(c) Legal and legislative
(d) Codes, ordinances, and regulations
(e) Compliance and advocacy
(f) Product design
(g) Travel and transportation
(h) Periodicals and information services
(i) Films

General. You should know about three basic "sources to sources". One is a comprehensive work entitled Barrier-Free Design: A Select Bibliography, prepared by Peter L. Lassen, Paralyzed Veterans of America, Inc. in 1973. This is an exhaustive work—a half-inch thick binder with 23 categories and several hundred items, some annotated, many not. Write to Michigan Paralyzed Veterans of America, 30408 Ford Rd., Garden City, Mich. 48135. $6.

A second good source is Architectural Planning for the Physically Handicapped. This is a brief, 13 page checklist of recent publications and is compiled regularly by the library of the National Easter Seal Society for Crippled Children and Adults. It contains some 70 items and is annotated. Single copies are free.

A continuing guide to published resources is Rehabilitation Literature, a monthly journal published by the NESS-CCA library at $10 a year. All rehabilitation topics, not only those on barrier-free design, are covered.

Additional resources include Programs of Rehabilitation Services Administration. Review of programs is divided into goals, grants to facilities, special projects, training resources and other programs. Useful appendix lists RSA's regional offices, plus addresses of State vocational rehabilitation agencies. 32 pp. Latest edition is 1971, but revised edition is planned. Write to Rehabilitation Services Administration, Department of Health, Education and Welfare, Room 3108, South Building, 300 C Street S.W., Washington, D.C. 20201.

A 14-nation international United Nations Expert Group on Eliminating Barriers was convened in the summer of 1974 and an edited report of its deliberations is to be published in the spring of 1975. Contact the UN Documents Office, United Nations Plaza, New York, N.Y. 10017.

Design for All Americans, a report of the National Commission on Architectural Barriers to Rehabilitation of the Handicapped, 1967. Catalog no. F517.102:D46, U.S. Government Printing Office, Washington, D.C. 20402. 54 pp. 50 cents. A key document that led to passage of P.L. 90-480 and other pioneering barrier-free legislation. Excellent background statement, especially a chapter on "Why the problem persists." Made somewhat dated by recent advances.

Another landmark reference is Design for the Disabled, by Selwyn Goldsmith, 2nd ed. London: Royal Institute of British Architects, 1967. 207 pp. $19.50 Available in U.S. through McGraw-Hill Book Co., 1221 6th Avenue, New York, N.Y. 10020. Written in eloquent style and accompanied by numerous figures and diagrams. Author believes handicapped should be treated as having special requirements; this opposes the more preva-

(a) General
(b) Design guides

lent U.S. view which seeks to make all facilities accessible to handicapped persons without need for assistance.

A report that deals with the implications of new laws on the education of handicapped children is One out of Ten: School Planning for the Handicapped. A report from Educational Facilities Laboratories. 1974. 24 pp., ill. Unpriced. It describes the changing mandate for special education, and presents, with examples, a series of alternative models for providing education, treatment and therapy to handicapped children. Of special interest is the "cascade" system: this model provides a variety of services to handicapped children ranging from absorption into the everyday classroom, all the way to the residential hospital —depending on the severity of the handicap.

Design guides. The following design guides have been chosen because they are easily usable by architectural and engineering designers as well as by community architectural barrier committees who want to become familiar with the elements of good barrier-free design.

Making Facilities Accessible to the Physically Handicapped. Performance criteria prepared by the New York State University Construction Fund, 194 Washington Avenue, Albany, N.Y. 12210, 1967 (compact, revised version issued January 1974). 1974 edition available at no cost; write to Stephen Cotler. 1967 edition out of print but on file at major libraries.

This guide has had a widespread influence on the design of barrier-free higher education facilities, not only in New York but in several other states. Use as a design guide or evaluation mechanism.

Checklist and Graphic Illustrations designed for use as a guide in designing buildings and facilities which are accessible to and usable by the physically handicapped. Prepared by John C. Worsley AIA, State Architect of the State of California. 18 pp. Available from California Council AIA, 1736 Stockton St., San Francisco, Calif. 94133. A major asset is its succinctness. Includes guidelines for spaces that call for special attention, such as public or college dining areas, lecture rooms, laboratories, dormitories.

Construction details: Planning for the Handicapped was prepared by the Committee to Eliminate Architectural Barriers in Westchester County. A project of the Westchester Easter Seal Society for Crippled Children and Adults. 1972. 10 pp. For copies write to 202 Mamaroneck Avenue, White Plains, N.Y. 10601. The chief virtue of this leaflet is its compactness (8½ × 5½ in).

Architectural Facilities for the Disabled, a project of the Information Center of ICTA (International Center on Technical Aids, Housing and Transportation). 1973. 33 pp. Contact ICTA Information Center, Fack S-161 03, Bromma, Sweden. $2.00. An excellent guide, with detailed well-organized design information including many drawings. All dimensions metric. Not based on ANSI standard 117.1.

Learning Module: Barrier-free Design for the Elderly and the Disabled is a 3-part self instructional module developed by the All-University Gerontology Center and Center for Instructional Development, Syracuse University. Available spring 1975 from Research Office, School of Architecture, 118 Clarendon St., Syracuse, N.Y. 13210. $15 (with slide-tape); $6 (without). Aim of this package is for one with little or no experience in the field to develop a working knowledge for purposes of design or project evaluation. The 3-part module is made up of a 30 pp. booklet with a narrative text on concepts and background, a 20-minute slide tape of conversation with elderly people on their problems, and a 120 pp. programmed workbook with research data and a series of problems to be solved.

An Illustrated Handbook of the Handicapped Section of the North Carolina State Building Code, prepared by Ronald L. Mace AIA, Betsy Laslett, editor. 1974. Available from North Carolina Department of Insurance, P.O. Box 26387, Raleigh, N.C. 27611. $1.50. The new handicapped section provides guidelines for making most new and remodeled buildings accessible to and usable by handicapped people—those in wheelchairs, on crutches, with leg braces or with sight, hearing or coordination defects, or those who through aging, accident or disease move with difficulty. The section has been fully illustrated to help inspectors, designers and builders implement the code. In addition to the Code section and illustrations, the publication has reprinted four recent North Carolina laws affecting rights of the handicapped and the removal of barriers—two of them dealing with tax credit incentives.

Wheelchair Interiors, by Sharon C. Olson and Diane K. Meredith. National Easter Seal Society for Crippled Children and Adults, 1973. 46 pp. $1.50. Guidelines for making a house or apartment livable for wheelchair bound individuals. Separate chapters on the kitchen, the laundry, the bathroom, the bedroom. Usefully and liberally illustrated.

The Functional Home for Easier Living, designed specifically for the physically disabled, the elderly and those with cardiac handicaps. Undated, but about 1960. Prepared by Institute of Physical Medicine and Rehabilitation, New York University Medical Center, 400 East 34th Street, New York, N.Y. 10016. Out of print but may be consulted at Publications Office, Room 606 of the Institute at 400 East 34th Street; at the library of the National Easter Seal Society, Chicago; and at major libraries. Institute also offers leaflet that lists some 25 other publications on rehabilitation. A guide to building or adapting a single family house or apartment unit for use by physically handicapped persons.

Building for the Handicapped, prepared by The Architects Collaborative, 46 Brattle Street, Cambridge, Mass. 02138. Publication pending. An excellent, detailed, heavily illustrated guide intended for architects, builders, developers, administrators and others concerned with planning buildings and public spaces. Recommendations focus mainly on needs of people in wheelchairs because these needs are most demanding of space. Contains useful tabulation of specific requirements by various state and Federal agencies and jurisdictions.

Day on Wheels, prepared by the General Services Administration, $1.50. Describes barriers facing the elderly and the handicapped in and around office buildings. Written to orient GSA's architectural trainees to the special needs of handicapped persons. Contact GSA's Business Service Centers throughout the U.S. or the Public Building Service, Professional Services Division, 18th and F Sts., N.W., Washington, D.C. 20405.

The Blind: Space Needs for Rehabilitation, by F. Cuthbert Salmon and Christine F. Salmon. Stillwater, Okla. 74074: Oklahoma State University School of Architecture, 1964. 82 pp. ill. $4. Third printing planned for mid-1975. A basic guide to designing rehabilitation centers serving the blind. Useful general information on space orientation requirements of blind people.

American National Standard ANSI A117.1-1961 specifications for making buildings and facilities accessible to, and usable by the handicapped. 1961. Single copies free from National Easter Seal Society. Additional copies at $2.75 from American National Standards Institute, 1430 Broadway, New York, N.Y. 10018. 11 pp. This standard has been incorporated by reference in most Federal, state and local legislation and codes. It covers building approaches, parking, ramps, doors and entrances, toilets, fountains, phones and warning signals. Deals chiefly with public buildings. A revised standard to cover housing is being developed at the University of Syracuse.

Several major national private chains and corporations have developed programs or specifications for use in the design of their facilities. Among the better known programs are those of Sears Roebuck and Co.; IBM; Quality, Ramada and Holiday Inns; McDonald's. There is no known listing, and those interested in exploring individual policies should contact the manager of the local branches or offices of such national corporations.

Landscape Design for the Handicapped by Jay Jorgensen. 60 pp. $5.50. Accent on Access: Standards and Guidelines for the Design of Facilities and Equipment to Accommodate the Handicapped by Larry Kirk, Department of Housing and Urban Development. 48 pp. $6. Barrier-Free Site Design. Unpriced. Three publications available from American Society of Landscape Architects Foundation, Publications Order Department, 1750 Old Meadow Road, McLean, Va. 22101. Payment must accompany orders.

Legal and legislative. One of the best reviews on the legal background of the rights of the handicapped is an article in the Georgetown Law Journal entitled "Abroad in the land: Legal strategies to effectuate the rights of the physically disabled," by Ann Gailis and Keith M. Susman (Vol. 61, No. 6, July 1973, pp. 1501–1523). The article has been reprinted and is distributed by the President's Committee on Employment of the Handicapped.

Frank Laski has written two informative articles in the May and June 1974 issues of The Social and Rehabilitation Record. Entitled "Civil Rights Victories for the Handicapped," they trace the "right to education," "the right to treatment," and the "right to a barrier-free environment" of the handicapped. Contact the editor, Rm. 5332-South, SRS/HEW, Washington, D.C. 20201.

In August 1973 the Committee on Barrier-free Design of the President's Committee on Employment of the Handicapped published the results of A Survey of State Laws to Remove Barriers. 23 pp. Information includes date, coverage, presence of enforcement and sanction provisions. Several states have since passed new laws or amended existing ones.

For example, a new Section 13A of Chapter 22 of the General Laws of Massachusetts was signed into law in July, 1974, establishing a powerful Architectural Barriers Board in the Department of Public Safety (note a discussion of this Board in Chapter I). These documents are available for $1 as Publication #1098 from the Public Document Room #116, State House, Boston, Mass. 02133.

Those who wish to trace in detail the background and passage of legislation at the Federal level should contact the staff director of those congressional committees directly involved with the legislation. The Senate Committee on Labor and Public Welfare (Subcommittee on the Handicapped) and the House Committee on Education and Labor are responsible for the Rehabilitation Act of 1973 (Public Law 93-112), and for the proposed 1974 amendments that strengthen compliance provisions of P.L. 90-480. P.L. 90-480 (the Architectural Barriers Act of 1968, as amended) was the work of the Senate and House Committees on Public Works.

Especially helpful for historical and other background information are the staff reports that accompany bills. Examples of this is Senate Report 93-48 which accompanied the proposed Rehabilitation Act of 1972 (vetoed by the President but signed into law in slightly revised form as P.L. 93-112 in 1973); and the three-part Senate report entitled A Barrier-Free Environment for the Elderly and the Handicapped containing a transcript of 1971 hearings held by the Senate Special Committee on Aging.

(c) Legal and legislative
(d) Codes, ordinances and regulations
(e) Compliance and advocacy

Codes, ordinances and regulations. At the local level, an important resource for a community architectural barriers group that plans to work for tougher local codes is Matthews Municipal Ordinances, 4 vols., text and forms, 1972–73, with latest Cumulative Pocket Parts, by Thomas A. Matthews and Byron S. Matthews, $130. Published by Callaghan & Company, 6141 N. Cicero Ave., Chicago, Ill. 60646. Volume I. describes what is involved in drafting a municipal ordinance and how to create a "living document." Chapters 16 and 17 in particular focus on ordinances influencing public buildings and grounds, and streets. Chapter 19 covers building regulations, chapter 20 city planning and chapter 21 zoning. A lawyer on your committee will have access to this resource.

Useful documents dealing with specific states or municipalities are these:

Handicapped Code Amendments to the Municipal Code of Chicago, 1973. Write to Index Publishing Corp., 308 West Randolph St., Chicago, Ill. 60606, and ask for the Structural Section of the Building Code. $4.20. These are strong, enforced amendments that also specify required quantity ratios for provisions such as wide parking spaces, accessible toilets, theater seats, etc.

Amendments to the New York State Building Construction Code Relative to the Physically Handicapped, 1971. Division of Housing and Urban Renewal, Housing and Building Codes Bureau, 2 World Trade Center, New York, N.Y. 10047. Contained in Part B (applicable to multiple dwellings; $2) and Part C (applicable to general building construction; $2) of the Code. Enclose money with request.

Veterans Administration Construction Standard CD 28: Accommodations for the Physically Handicapped. Promulgated 1973. Applies to some 170 VA hospitals and other VA facilities. Available on request from Assistant Administrator for Construction (08), U.S. Veterans Administration, 810 Vermont Ave., N.W., Washington, D.C. 20420. Standard complements ANSI A117.1 and covers such items as cafeterias, retail stores, carpets and even ash-trays.

Section 316.0: Provisions for the Physically Handicapped and Aged is a new section of the BOCA International Code, one of 4 proprietary or "model" codes widely adapted by municipalities who have no building code of their own. Available early in 1975. (BOCA is short for Building Officials and Code Administrators). Write to BOCA International, 1313 East 60th Street, Chicago, Ill. 60637. $12.50 (non-members); $8 (BOCA members).

A Guide for Codes Adoption and Code Enforcement by Daniel M. Taylor. 39 pp. Available at no charge from Leo J. Zuber, Assistant Regional Administrator for Community Planning and Management, HUD Region 4; 1371 Peachtree St., N.E., Atlanta, Ga. 30309. Thorough series of ten articles originally published in Southern Building Magazine. Covers importance and function of building and housing codes; goals and objectives; how to adopt and revise codes; administration and enforcement; and compliance programs.

Compliance and Advocacy. Accessibility: the Law and the Reality, a survey to test the application and effectiveness of Public Law 90-480 in Iowa, 1974, 68 pp. For copies write to the President's Committee on Employment of the Handicapped, Washington, D.C. 20210. A very useful model for organizing, conducting and documenting a barrier-free law compliance study. Contains useful form for an accessibility checklist to be used by field checkers.

Access Chicago is a Chicago-based advocacy group. Not only is its own history a useful model on how to develop an effective organization, but its publications are interesting examples of continuing activity. Publications include a bi-monthly newsletter issued by Access' Advisory Council; a handbook of barrier-free design for architects and designers; and Access Chicago: A Guide to the City (1973, 92 pp. $1) which is, as its preface states, "a guide on where to go and how to get there if you are mobility-limited." Banks, colleges, night clubs and stores are among 14 types of facilities covered. For more information, write to: Access Chicago, Rehabilitation Institute of Chicago, 345 E. Superior Street, Chicago, Ill. 60611.

Under the title of Architectural Barriers Guide, the National Easter Seal Society for Crippled Children and Adults offers a variety of materials to guide groups who want to work for a barrier-free environment. These materials consist of a kit of five parts:

(a) Architectural Barriers: The Problem and the Challenge (1 p.)
(b) Creating an Architectural Barriers Task Force within Your Community (3 pp.)
(c) Guidelines for Establishing an Architectural Barriers Committee (1 p.)
(d) Community Survey and Guide (6 pp.)
(e) Carrying on a Program of Watchdog Activities (2 pp.)

Single copies free. Multiple copies: prices on request. The National Easter Seal Society points out that the models described here represent a variety of approaches, no one of which applies in all cases.

Handbook for Handicapped, is a guide to serve handicapped students at the University of South Florida. Its 41 pages are packed with frank information about the opportunities and physical barriers a handicapped student may encounter on campus. Contents cover university admission policies, agency services, how to get around the campus, special prob-

lems of the deaf and blind, and hints to residence hall living. A map of the campus is keyed with symbols denoting ramps, accessible phones and rest rooms and other barrier-free provisions. Every institution should compile such a guide. Louise Friderici, editor. Contact: Advisor to Handicapped Students, CTR 217, University of South Florida, Tampa, Fla. 33620. No cost to date.

Rights Handbook for Physically Handicapped Children, a demonstration project in advocacy for physically handicapped children. 1974. Issued by the Easter Seal Society for Crippled Children of Massachusetts, Inc., 14 Somerset Street, Boston, Mass. 02108. 65 pp. An excellent detailed, factual guide to help parents of handicapped children in Massachusetts understand and use existing laws.

Trends for the Handicapped, special issue of Trends, publication of the Park Practice Program, National Park Service. $2.50. Comprehensive coverage of problems handicapped persons encounter, with emphasis on the out of doors. Series of 12 articles covers most aspects of topic. July–September 1974 issue. Write to National Recreation and Park Association, 1601 N. Kent St., Arlington, Va. 22209.

Detecting Physical Barriers in a University Setting, by R. M. Harris, A. C. Harris and D. D. Whipple. $2. Detecting and Eliminating Architectural Barriers: Some Methodological Considerations, by A. C. Harris and R. M. Harris. 75 cents for sample copy of output of computer program and 15 cents for survey form. Write to R. M. or A. C. Harris, Department of Psychology, University of Kansas, Lawrence, Kansas 66045.

A Laboratory Campus for the Handicapped, "Planning for Higher Education," February 1975 issue. Reviews efforts at MIT to enable handicapped persons to use campus facilities. Write to O. Robert Simha, MIT Planning Office, E19-451, 77 Massachusetts Ave., Cambridge, Mass. 02139.

Product Design. Designing to Accommodate the Handicapped, 1974 Armco Student Design Program, 28 pp. Armco Steel Corporation, 703 Curtis St., Middletown, Ohio 45043. No charge. 35 young designers and engineers have designed common, every day products in an uncommon way so handicapped people may use them. Samples: door handles, first aid kits, automobile controls, TV sets, kitchen sets.

The handicapped majority, special section of Industrial Design magazine, May 1974. 24 pp. $2.50. Write to 1515 Broadway, New York, N.Y. 10036. Excellent coverage of product design and its potential to either help or frustrate handicapped individuals. Wheelchairs, packaging, appliance design, controls, prosthetic devices are covered.

The National Easter Seal Society for Crippled Children and Adults has available a List of Manufacturers of Equipment used by the handicapped, or in their rehabilitation. The Society also has a listing of titles of works dealing with Self-Help for the Handicapped.

Chairmobile is an aid for the handicapped. An original, flexible, interchangeable, battery powered wheelchair designed by the Earl of Snowdon. 12-page brochure explains its concept and workings. Available from David Owen, Rubery Owen Co., Ltd., Darlaston, P.O. Box 10, Wednesbury, Staffs, England.

Services for Special Needs by the Bell Telephone System. 24 pp. On request from your local Bell Telephone business office. Booklet explains what Bell can do for those with speaking, hearing or seeing deficiencies, and those with motion impairments.

Travel and Transportation. This Syllabus focuses largely on the problems handicapped persons face within buildings and as they approach and enter buildings. To give you a chance to explore in greater depth the barrier problems in travel and transportation, the following publications are listed:

Travel Barriers, summary of findings by Department of Transportation and Abt Associates, Inc., 1970. 46 pp., ill. Write to Department of Transportation, Office of the Secretary, Washington, D.C. 20590. Excellent review of problems and solutions. Brochure covers kinds of barriers, design and operating guidelines, and how to select and apply the guidelines.

A List of Guidebooks for Handicapped Travelers, 3 ed., September 1972, compiled by the Women's Committee, President's Committee on Employment of the Handicapped. Lists cities that offer "access" guides, along with addresses to write to.

National Park Guide for the Handicapped, published by National Park Service. Write to Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Catalog No. I29.9/2-H19. 90 cents.

Highway Rest Area Facilities Designed for Handicapped Travelers, by the President's Committee on Employment of the Handicapped, Washington, D.C. 20210. 1972. 23 pp. A listing, by state, of facilities located on or near the interstate highway system.

Periodicals and information services. The best way to keep up to date with developments in barrier-free design is to read the Newsletter published every other month by the Committee on Barrier-free Design of the President's Committee on Employment of the Handicapped. This four page letter, edited in lively fashion by Edmond Leonard, contains on average 15–20 news items per issue, and covers both building and transportation barriers.

Accent on Living is an outspoken, pocket-sized periodical edited quarterly for—and by—handicapped men and women. $2.50 per year. The same com-

(f) Product design
(g) Travel and transportation
(h) Periodicals and information services
(i) Films

pany has started Accent on Information, a computer-aided information service, which for $3.00 per search and 25¢ per page copied will look up answers to questions on a wide variety of accessibility topics, from housing and other architectural barriers to products, furniture, education and voting. Write to: P.O. Box 726, Bloomington, Ill. 61701.

Other publications include Paraplegia News, by Paralyzed Veterans of America and National Paraplegia Foundation, edited at 935 Coastline Drive, Seal Beach, Calif. 90740. Monthly. $3.00 per year.

Performance, published by the President's Committee on Employment of the Handicapped to report progress on employment opportunities. Contains ideas for use by governors' and community committees.

Rehabilitation Literature published by National Easter Seal Society for Crippled Children and Adults. Review of new research and other developments in the rehabilitation field.

The Social and Rehabilitation Record magazine is published by Social and Rehabilitation Service, Room 5332-South, SRS/HEW, Washington, D.C. 20201.

The AIA Journal and other national professional architectural and design magazines from time to time carry articles on barrier-free topics. Consult the Architectural Index, issued annually and available at many public libraries and most architectural offices and schools of architecture. Published by Ervin Bell at P.O. Box 1168, Boulder, Colo. 80302.

Rehabilitation Gazette. Published every quarter and based on an active correspondence by the editors, Mr. and Mrs. Lauri, with thousands of handicapped individuals around the world. Contains practical information on assistive programs and devices, medical news, housing and transportation, and summaries of experience as to which countries are easy (or hard) to travel in. Authoritative; light and informal in style. 4502 Maryland Ave., St. Louis, Mo. 63108.

Films. Beating the Averages (30 min., color). Chief, Distribution Section, National A-V Center, GSA, Washington, D.C. 20409. $109.50 (buy). Also for loan.

Shows environmental barriers wheelchair-bound handicapped persons encounter on a typical day in conventionally designed homes and places of work. True stories.

Sound the Trumpets (22 min., color). Minnesota Society for Crippled Children and Adults, 2004 Lyndale Ave., South, Minneapolis, Minn. 55405. Shows how sensible planning and construction not only helps the individual handicapped but also can bring savings and benefits to a community—increased church attendance and retail sales, reduced welfare costs, building insurance and maintenance costs.

The Surest Test (10 min., color). Easter Seal Society for Crippled Children and Adults of Washington, 521 2nd Ave. West, Seattle, Wash. 98119. $68 to buy. No charge to rent. Camera follows a wheelchair user as she leaves a rehabilitation unit to enter the community, and resulting encounters with barriers.

B. SOCIETIES, AGENCIES AND OTHER HELPFUL ORGANIZATIONS

Over the years, certain organizations have emerged as leaders in developing information and services aimed at preventing and removing barriers in our man-built environment. The following listing offers a brief capsule of facts about each such group, along with information you will need to contact them. Most of them have on file brochures about their services, publications, the location and address of any regional or branch offices, and a listing of their current officers and staff. Public agencies are marked with an asterisk (*). Pages 32–34 contain an expanded listing of over 50 organizations.

*Rehabilitation Services Administration, 330 C Street S.W., Washington D.C. 20201. RSA is an agency of the Department of Health, Education and Welfare. Its program consists primarily of support of the state-Federal program of rehabilitation services and special grants and programs relating to mental retardation, and other development disabilities. This includes grants for planning and constructing facilities, community service programs, and improving services in state-operated mental retardation facilities. RSA also supports evaluation and work adjustment services; projects for career development in rehabilitation; projects for career development of handicapped people in public service; research and demonstration; training programs to increase the numbers of rehabilitation personnel; and grants for constructing rehabilitation facilities and improving their services.

The Commissioner and staff of RSA have helped to guide and have provided funds for many of the historic efforts to remove barriers. These include the development of the ANSI Standard, staffing the National Commission on Architectural Barriers, development of specifications for Public Law 90-480, and of regional conferences with the American Institute of Architects to orient architects to barriers problems.

You can contact RSA in Washington or through its ten regional offices (Boston, New York, Philadelphia, Atlanta, Chicago, Kansas City, Mo., Denver, Dallas, San Francisco and Seattle). An RSA brochure entitled Programs lists names and addresses, as well as a listing, by state, of state vocational rehabilitation offices or departments. Services for the blind are in some states organized in a separate agency.

American Institute of Architects, 1735 New York Avenue, N.W., Washington D.C. 20006. The AIA has had a logical and consistent interest in barrier-free design

over many years. Directly or through its local chapters or individual practitioners, it has guided or taken part in such programs and assignments as the National Commission on Architectural Barriers to Rehabilitation of the Handicapped (1966–1967), the AIA Barrier-free architecture workshop program (1969), the AIA Barrier-free Task Force and now the National Center for a Barrier-free Environment (incorporated in 1974).

The AIA publishes a broad series of documents that describe, for use by non-architects, recommended practice in all phases of a building's creation. An index of these documents is available from the AIA, and in many cases these documents are available for inspection and purchase at the AIA's local chapters. There are at present some 150 such chapters, as well as State societies in each state. Several of these chapters have taken strong initiatives in their community, jointly with other interested societies, in moving for barrier-free legislation, codes, enforcement and compliance. A listing of these, with addresses and current officers and executive directors, may be obtained from AIA headquarters in Washington, D.C.

The National Easter Seal Society for Crippled Children and Adults, 2023 West Ogden Avenue, Chicago, Illinois 60612. A pioneer in its concern for the removal of architectural barriers since 1919, the Society has had a formal Architectural Barriers Committee of its Trustees since 1945. It now offers, directly or through its organization of largely autonomous State, county and local affiliates, an enormous array of services, publications, scholarship programs and advisory activities. Its library in Chicago is one of the best equipped in the world on the topic.

National Center for a Barrier-Free Environment. The National Center, incorporated in 1974, is a coalition of the major groups active in promoting a barrier-free architectural and transportation environment. Its stated aims are to:

(a) Monitor activities and programs of Federal agencies that administer programs affecting mobility of the handicapped,
(b) Work for fully accessible transportation systems,
(c) Support barrier-free legislation,
(d) Promote improved design standards,
(e) Encourage research and development programs and demonstration projects,
(f) Promote greater public awareness of the needs and problems of handicapped individuals,
(g) Improve professional education of designers with regard to the needs of the handicapped and aged.

For more information, write to Edward H. Noakes, chairman, Board of Directors, National Center for a Barrier-Free Environment, 7315 Wisconsin Avenue, N.W., Washington, D.C. 20014.

*The Committee on Barrier-free Design, an arm of the President's Committee on Employment of the Handicapped, 1111 20th Street N.W., Washington, D.C. 20210. The Committee on Barrier-free Design serves as a forum for Federal agencies involved with design and construction, as well as for voluntary agencies in the handicapped field. Its activities have included the design and carrying out of legislative and other surveys, publication of a bi-monthly newsletter, pamphlets and brochures, and the reprinting and dissemination of useful information published elsewhere. Write to the Committee for a detailed look at past, present and planned activities.

Paralyzed Veterans of America, Inc. 7315 Wisconsin Avenue, Suite 301-W, Washington, D.C. 20014. Activities include active program of publications of direct use to handicapped individuals.

EXPANDED LIST OF POTENTIAL SOURCES OF COUNSEL AND INFORMATION

*Administration on Aging
U.S. Dept. of Health, Education and Welfare
330 C Streets S.W.
Washington, D.C. 20201

American Association of Workers for the Blind, Inc.
1511 K Street N.W.
Washington, D.C. 20005

American Congress of Rehabilitation Medicine
30 N. Michigan Avenue
Chicago, Ill. 60602

American Foundation for the Blind, Inc.
15 West 16th Street
New York, N.Y. 10011

American Institute of Architects
1735 New York Ave., N.W.
Washington, D.C. 20006

American National Red Cross
17th and D Streets N.W.
Washington, D.C. 20006

American Orthotic and Prosthetic Association
1440 N Street N.W.
Washington, D.C. 20005

The American Psychiatric Association
1700 18th Street N.W.
Washington, D.C. 20009

American Public Health Association
1015 18th Street N.W.
Washington, D.C. 20036

The Arthritis Foundation
1212 Avenue of the Americas
New York, N.Y. 10036

Blinded Veterans Association
1735 DeSales Street N.W.
Washington, D.C. 20036

* Public agency

Boy Scouts of America
Scouting for the Handicapped
Division
Boy Scouts of America
N. Brunswick, N.J. 08902

*Bureau of Education for
the Handicapped
U.S. Dept. of Health, Education
and Welfare
400 Maryland Avenue S.W.
Washington, D.C. 20202

Center for Concerned
Engineering
1224 DuPont Circle Building
Washington, D.C 20036

Council of Organizations
Serving the Deaf
Wilde Lake Village
Grn. #310
Columbia, Md. 20044

*Department of Housing and
Urban Development,
Office of the Assistant
to the Secretary for Programs
for the Elderly and Handicapped
Washington, D.C. 20410

Disabled American Veterans
3725 Alexandria Pike
Cold Spring, Ky. 41076

Eastern Paralyzed Veterans
432 Park Avenue South
New York, N.Y. 10016

Educational Facilities Laboratories
850 Third Avenue
New York, N.Y. 10022

Epilepsy Foundation of
America
1828 L Street N.W.
Washington, D.C. 20036

Federal of the Handicapped, Inc.
211 West 14th Street
New York, New York 10011

Gerontological Society
1 Dupont Circle N.W.
Washington, D.C. 20036

Girl Scouts of the U.S.A.
Scouting for the Handicapped
Girls Program
830 Third Avenue
New York, N.Y. 10022

Goodwill Industries of
America
9200 Wisconsin Avenue
Washington, D.C. 20014

ICD Rehabilitation and
Research (Formerly
Institute for the
Crippled and Disabled)
340 East 24th Street
New York, N.Y. 10010

ICTA Information Center
Fack S-161 93
Bromma, Sweden

International Association
of Rehabilitation
Facilities, Inc.
5530 Wisconsin Ave. #995
Washington, D.C. 20015

Junior National Association
of the Deaf
Gallaudet College
Washington, D.C. 20002

Muscular Dystrophy
Associations of America, Inc.
1790 Broadway
New York, N.Y. 10019

*Mayor's Office for the Handicapped
City Hall
New York, N.Y. 10022
(Eunice Fiorito)

National Association of
the Deaf
814 Thayer Avenue
Silver Spring, Md. 20927

The National Association
for Mental Health, Inc.
1800 North Kent Street
Arlington, Va. 22209

National Association of the
Physically Handicapped, Inc.
6473 Grandville Avenue
Detroit, Mich. 48228

National Association for
Retarded Children
2709 Avenue E. East
POB 6109
Arlington, Texas 76011

National Congress of
Organizations of the
Physically Handicapped, Inc.
7611 Oakland Avenue
Minneapolis, Minn. 55423

National Easter Seal Society for
Crippled Children and Adults
2023 West Ogden Avenue
Chicago, Ill. 60612

National Federation of the
Blind
218 Randolph Hotel Bldg.
Des Moines, Iowa 50309

The National Foundation/
March of Dimes
1275 Mamaroneck Avenue
White Plains, N.Y. 10605

National Industries for
the Blind
1455 Broad Street
Bloomfield, N.J. 07003

National Multiple Sclerosis
Society
257 Park Avenue South
New York, N.Y. 10010

National Paraplegia Foundation
333 N. Michigan Avenue
Chicago, Ill. 60601

*National Park Service
U.S. Dept. of the Interior
Federal Division of State
and Private Liaison
1100 L Street, N.W.
Washington, D.C. 20240

National Recreation and Park Association
1601 North Kent Street
Arlington, Va. 22209

National Rehabilitation Association
1522 K Street N.W.
Washington, D.C. 20005

National Therapeutic Recreation Society
(a branch of the National Recreation and Park Association)
1601 N. Kent Street
Arlington, Va. 22209

National Tuberculosis and Respiratory Disease Association
1740 Broadway
New York, N.Y. 10019

Paralyzed Veterans of America
7315 Wisconsin Avenue, N.W.
Suite 301-W
Washington, D.C. 20014

Perkins School for the Blind
175 N. Beacon Street
Watertown, Mass. 02172

*President's Committee on Employment of the Handicapped
(Committee on Barrier-free Design)
1111 20th Street, N.W.
Washington, D.C. 20210

*President's Committee on Mental Retardation
7th and D Streets S.W.
Washington, D.C. 20201

Rehabilitation Education Center,
University of Illinois
Oak Street at Stadium Dr.
Champaign, Ill. 61820
(Timothy Nugent, Director)
This Center and its director are early barrier-free pioneers.

Rehabilitation International USA
219 East 44th Street
New York, N.Y. 10017

*Rehabilitation Services Administration
HEW
330 C Street S.W.
Washington, D.C. 20201

United Cerebral Palsy Associations, Inc.
66 East 34th Street
New York, N.Y. 10016

*U.S. Dept. of Agriculture
Division of Recreation
U.S. Forest Service
Washington, D.C. 20250

*Veterans Administration
Health Care Facilities Service
810 Vermont Avenue, N.W.
Washington, D.C. 20420

Appendices

APPENDIX A. BUILDING SURVEY TO DEVELOP GUIDES FOR THE HANDICAPPED*

Name of Building _____ Phone Number _____

Street Address _____ City _____ State _____

Person Interviewed _____ Title _____

Circle YES or NO (Complete answer in space provided when necessary)

1. OFFSTREET PARKING
   a. Is an offstreet parking area available adjacent to building? ..... Yes No
   b. If adjacent offstreet parking is not available identify and give location of nearest and most convenient parking area _____
   c. Are parking area and building separated by a street? ..... Yes No
   d. Is the surface of the parking area smooth and hard (no sand, gravel, etc.)? ..... Yes No
2. PASSENGER LOADING ZONE
   a. Is there a passenger loading zone? ..... Yes No
   b. If yes, where is it located in relation to selected entrance? _____
3. APPROACH TO SELECTED ENTRANCE
   a. Which entrance was selected as most accessible? _____
   b. Is the approach to the entrance door ground level? ..... Yes No
   c. Is there a ramp in the approach to or at the entrance door? ..... Yes No
   d. If there are any steps in the approach to or at the entrance door, give total number of steps ..... _____
   e. If there are steps, is there a sturdy handrail on at least one side or in the center? ..... Yes No
4. ENTRANCE DOOR
   a. What is the width of the entrance doorway (with door open)? ..... _____
   b. Is the door automatic? ..... Yes No
   c. Are there steps between entrance and main areas or corridor? ..... Yes No
   d. If yes, what is the total number of steps? ..... _____
   e. If there are steps, is there a sturdy handrail in the center or on at least one side? ..... Yes No
5. ELEVATOR
   a. Is there a passenger elevator? ..... Yes No
   b. Does it serve all essential areas? ..... Yes No
6. ESSENTIAL AREAS (See instructions for explanation) Area 1 _____
   Area 2 _____ Area 3 _____

* Courtesy of National Easter Seal Society for Crippled Children and Adults.

7. ACCESS FROM ENTRY TO ESSENTIAL AREAS

	(1)		(2)		(3)	
a. Is the usable width of corridors and aisles at least 32"?	Yes	No	Yes	No	Yes	No
b. Is the narrowest clear doorway with door open 28" wide or more?	Yes	No	Yes	No	Yes	No
c. If not, what is the width?	_____		_____		_____	

8. INTERIOR OF ESSENTIAL AREAS

a. Are there any steps between essential areas not served by elevator?	Yes	No	Yes	No	Yes	No
b. Does each flight of steps have a sturdy handrail on at least one side or in the center?	Yes	No	Yes	No	Yes	No

9. PUBLIC TOILET ROOMS

a. Where are toilet rooms located? Men _____

Women _____

	MEN		WOMEN	
b. Would one need to go up or down steps to get to toilet room?	Yes	No	Yes	No
c. If so, how many?	_____		_____	
d. If there are steps, does each flight of steps have a sturdy handrail on at least one side or in the center?	Yes	No	Yes	No
e. What is the width of toilet room entrance doorway (with door open)?	_____		_____	
f. Is there free space in the room to permit a wheelchair to turn?	Yes	No	Yes	No
g. What is width of widest toilet stall door?	_____		_____	
h. Does this stall have handrails or grab bars?	Yes	No	Yes	No

10. MOTEL OR HOTEL GUEST ROOMS

a. What is width of the entrance door to guest room (with door open)?	_____	
b. What is width of entrance door to bathroom (with door open)?	_____	
c. Are there handrails or grab bars near the toilet?	Yes	No
d. Are there handrails or grab bars for the bath or shower?	Yes	No

11. PUBLIC TELEPHONE

a. Where is the most accessible phone located? _____

b. What type (booth, wall, desk)? _____

c. If phone is in a booth, what is width of booth door (with door open)?	_____	
d. Is the handset 48" or less from the floor?	Yes	No
e. Does the phone have amplifying controls for the hard of hearing?	Yes	No

12. INTERIOR (Auditorium, Church, Restaurant, etc.)

a. What is the distance from floor to edge of restaurant table?	_____	
b. If there are booths, can a wheelchair be placed at the open end of booth?	Yes	No
c. In theaters, public halls, churches, etc. can persons remain in wheelchairs?	Yes	No

d. If yes, where? _____

e. Can arrangements be made to reserve wheelchair space?	Yes	No

13. ASSISTANCE AND AIDS AVAILABLE

a. Is there an attendant who will take cars? ..... Yes No

b. Is there help available for those needing assistance in entering? (doorman, porter)? ..... Yes No

c. If not, is help available for those needing assistance if arranged for in advance? ..... Yes No

d. Who to call in advance for assistance _____

e. Telephone Number _____

f. Are wheelchairs available? (at airports, hotels, museums, etc.)? ..... Yes No

Surveyor _____ Date _____

Address _____ Phone _____

ADDITIONAL COMMENTS

APPENDIX B.
SUGGESTED ACCESSIBILITY COMPLIANCE CHECKLIST*

A. PARKING LOTS	YES	NO
1. Are accessible spaces approximate to the facility?	___	___
a) Are they identified as reserved for use by individuals with physical disabilities?	___	___
2. Are there parking spaces open on one side, allowing room (12 ft. minimum width) for individuals in wheelchairs or on braces and crutches to get in and out onto a level surface?	___	___
a) Do they allow people to get in or out on a level surface?	___	___
3. Is it unnecessary for individuals in wheelchairs or those using braces and crutches to wheel or walk behind parked cars?	___	___
4. Is distribution of spaces for use by the disabled in accordance with the frequency and persistency of parking needs?	___	___

COMMENTS

B. WALKS		
1. Are public walks at least 48" wide?	___	___
a) Is the gradient not greater than 5%?	___	___
2. Are walks of a continuing common surface, not interrupted by steps or abrupt changes in level?	___	___
3. Wherever they cross other walks, driveways, or parking lots do walks blend to a common level?	___	___
4. Do walks have a level platform at the top which is (a) at least 5 feet by 5 feet if a door swings out onto the platform or toward the walk, or (b) 3 feet by 5 feet if door doesn't swing onto the platform?	___	___
5. Does the platform extend at least 1 foot beyond each side of the doorway?	___	___

COMMENTS

C. RAMPS		
1. Do ramps have a slope no greater than 1 foot rise in 12 feet?	___	___
2. Do ramps have handrails on at least one side?	___	___

* Courtesy of Iowa Chapter AIA

a) Are they 32" in height measured from the surfaces of the ramp? ..... ___ ___

b) Are the surfaces smooth? ..... ___ ___

c) Do they extend 1' beyond the top & bottom of the ramp? ..... ___ ___

3. Do ramps have a surface that is nonslip? ..... ___ ___

a) Do platforms comply with Questions B4 & B5? ..... ___ ___

4. Do ramps have at least 6 feet of straight clearance at the bottom? ..... ___ ___

5. Do ramps have level platforms at 30 foot intervals for purposes of rest and safety, and wherever they turn? ..... ___ ___

COMMENTS

D. ENTRANCES/EXITS

1. Is at least one primary entrance to each building usable by individuals in wheelchairs? (It is preferable that all or most entrances (exits) should be accessible to, and usable by, individuals in wheelchairs or other forms of physical disability.) ..... ___ ___

2. Is at least one entrance usable by individuals in wheelchairs on a level that would make the elevators accessible? ..... ___ ___

COMMENTS

E. DOORS AND DOORWAYS

1. Do doors have a clear opening of no less than 32" when open? ..... ___ ___

a) Are they operable by a single effort? Note: Two-leaf doors are not usable by those with disabilities unless they operate by single effort, or unless one of the two leaves meets the 32" width. ..... ___ ___

2. Are the doors operable with pressure or strength which could reasonably be expected from disabled persons? ..... ___ ___

3. Is the floor on the inside and outside of each doorway level for a distance of 5 feet from the door in the direction the door swings? ..... ___ ___

a) Does it extend 1' beyond each side of door? ..... ___ ___

4. Are sharp inclines and abrupt changes in level avoided at doorsills? ..... ___ ___

5. Do door closers allow the use of doors by the physically disabled persons? ..... ___ ___

COMMENTS

F. STAIRS AND STEPS

1. Do steps avoid abrupt nosing? ..... ___ ___
2. Do stairs have handrails 32" high as measured from the tread at the face of the riser? ..... ___ ___
3. Do stairs have at least one handrail that extends at least 18" beyond the top and bottom step? ..... ___ ___
4. Do steps have risers 7 inches or less? ..... ___ ___

COMMENTS

G. FLOORS

1. Do floors have a non-slip surface? ..... ___ ___
2. Are floors on each story at a common level or connected by a ramp? ..... ___ ___

COMMENTS

H. REST ROOMS

1. Is there an appropriate number of toilet rooms for each sex? ..... ___ ___
   a) Are they accessible to physically handicapped persons? ..... ___ ___
   b) Are they usable by physically handicapped persons? ..... ___ ___
2. Do toilet rooms have turning space 60" × 60" to allow traffic of individuals in wheelchairs? ___ ___
3. Do toilet rooms have at least one toilet stall that:
   a) is three feet wide? ..... ___ ___
   b) is at least 4'8" (preferably 5 feet) deep? ..... ___ ___

c) has a door that is 32 inches wide and swings out? ..... ___ ___

d) has grab bars on each side, 33" high and parallel to the floor, 1½ inches in diameter, with 1½ inches clearance between rail and wall, fastened securely to the wall at the ends and center? ..... ___ ___

e) has a width of at least 48" between the wall and the front of the stall entrance? ..... ___ ___

f) has water closet with seat 20" from the floor? ..... ___ ___

4. Do toilet rooms have lavatories with narrow aprons, which when mounted at standard height are usable by individuals in wheelchairs? ..... ___ ___

5. Are drain pipes and hot water pipes covered or insulated? ..... ___ ___

6. Are some mirrors and shelves at a height as low as possible and no higher than 40 inches above the floor? ..... ___ ___

7. Do toilet rooms for men have wall mounted urinals with the opening of the basin 19" from the floor, or have floor mounted urinals that are level with the main floor of the toilet room? ... ___ ___

8. Do toilet rooms have towel racks mounted no higher than 40" from the floor? ..... ___ ___

a) are towel dispensers mounted no higher than 40" from floor? ..... ___ ___

b) are other dispensers mounted no higher than 40" from the floor? ..... ___ ___

c) are disposal units mounted no higher than 40" from floor? ..... ___ ___

9. Are racks, dispensers and disposal units located to the side of the lavatory rather than directly above? ..... ___ ___

COMMENTS

_____

_____

_____

I. WATER FOUNTAINS

1. Is there an appropriate number of water fountains? ..... ___ ___

a) Are they accessible to physically handicapped persons? ..... ___ ___

b) Are they usable by physically handicapped persons? ..... ___ ___

2. Do water fountains or coolers have up-front spouts and controls? ..... ___ ___

3. Are they hand operated? ..... ___ ___

4. Are they hand and foot operated? ..... ___ ___

5. If coolers are wall mounted, are they hand operated, with basins 36 inches or less from the floor? ..... ___ ___

6. If there are floor mounted fountains, are spouts no higher than 30 inches? ..... ___ ___

7. Are these fountains accessible to people in wheelchairs? ..... ___ ___

COMMENTS

J. PUBLIC TELEPHONES

	YES	NO
1. Is there an appropriate number of public telephones accessible to physically handicapped persons?	___	___
2. Type: booth_____ wall mount_____		
3. Is height of dial from floor 48 inches or less?	___	___
4. Is coin slot located 48 inches or less from the floor?	___	___
5. (a) Are there telephones equipped for persons with hearing disabilities?	___	___
(b) Are these telephones identified as such?	___	___

COMMENTS

K. ELEVATORS

1. If more than a 1 story building, are elevators available to physically handicapped?	___	___
a) Are they usable by physically handicapped?	___	___
2. Are all of the controls 48" or less from floor?	___	___
3. Are the buttons labeled with raised (or indented) letters beside them?	___	___
4. Are they easy to push or touch sensitive?	___	___
5. Is the cab at least 5 feet × 5 feet?	___	___

COMMENTS

L. CONTROLS

1. Are switches and controls for light, heat, ventilation, windows draperies, fire alarms, and all similar controls of frequent or essential use, within the reach of individuals in wheelchairs?	___	___

COMMENTS

M. IDENTIFICATION

	YES	NO
1. Are raised (or recessed) letters or numbers used to identify rooms or offices?	___	___
2. Is identification placed on the wall, to the right or left of the door?	___	___
a) Are they at a height between 4'6" and 5'6", measured from floor?	___	___
3. Are doors not intended for normal use, that might prove dangerous if a blind person were to exit or enter by them, made quickly identifiable to the touch by knurling the door handle or knob?	___	___

COMMENTS

N. WARNING SIGNALS

1. Are audible warning signals accompanied by simultaneous visual signals for the benefit of those with hearing or sight disabilities?	___	___

COMMENTS

O. HAZARDS

1. When manholes or access panels are open and in use, or when an open excavation exists on a site, when it is approximate to normal pedestrian traffic, are barricades placed on all open sides at least 8' from the hazard, and warning devices installed?	___	___
2. Are there no low-hanging door closers that remain within the opening of a doorway, or that protrude hazardously into regular corridors or traffic ways?	___	___
3. Are there no low-hanging signs, ceiling lights, fixtures or similar objects that protrude into regular corridors or traffic ways? (A minimum height of 7', measured from floor is recommended)	___	___

4. Is lighting on ramps adequate? ..... — —

5. Are exit signs easily identifiable to all disabled persons? ..... — —

COMMENTS

Printed in U.S.A. June 1975 28